MAY 5, 1958

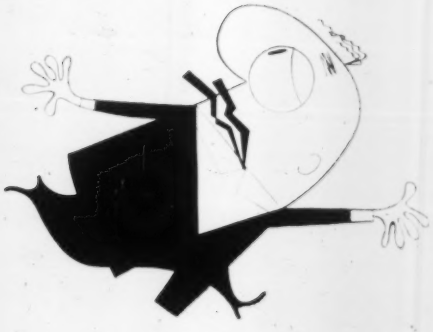
# STEEL

The Metalworking Weekly

A PENTON PUBLICATION

## How To Control Fringe Benefit Costs

Page . . 62



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# it's mainly a matter of TIMING!

## *The net cost of replacing a machine depends on WHEN you do it*

THERE'S A TIME to buy and a time to sell. A time to invest and a time to "sit tight." And a time when you *should* replace an old machine with a new one.

Actually, timing is the most important factor in any replacement program. For there is one precisely predictable time when the replacement of any machine will work out to your best advantage—productionwise and investmentwise. Too soon is just as bad as too late. Either way you *lose money!*

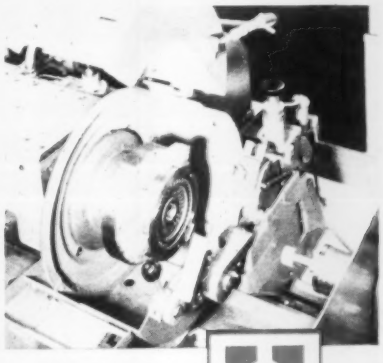
Unless you can afford a loss—and it could be substantial—don't trust intuition or rule-of-thumb computations to determine when a machine should be replaced. There are many variables involved, but they can all be expressed in dollars and cents. And correct timing then becomes a matter of simple arithmetic.

Our sales engineers are well experienced in making obsolescence studies and determining the proper replacement timing. If you'd like some expert assistance in planning your replacement program—or want to confirm your own calculations on a particular machine, just call in your Heald engineer. He will be glad to make a replacement analysis, without obligation of course. Similar studies by Heald engineers have pointed the way to many important savings.

---

***For Example:*** A large machinery manufacturer was using an old Model 72A Heald Internal to grind the bore and adjacent face of steel counter-shaft gears. A cost analysis revealed that by replacing this with a new Model 271 Size-Matic, substantial savings could be made. The new machine, shown at the right, was installed with the following results:

| | ANNUAL COSTS | |
|---|---|---|
| | Old Machine | New Machine |
| Direct Labor | $13,299.00 | $ 5,079.00 |
| Power Consumption | 427.00 | 182.00 |
| Property Taxes & Insurance | 45.00 | 552.00 |
| Normal Maintenance | 841.00 | 500.00 |
| Restorative Repairs, Old Mach. | 4,066.00 | ..... |
| Capital Investment, New Mach. | ..... | 6,256.00 |
| Total Cost Per Year | $18,678.00 | $12,569.00 |
| Annual Saving, New Machine..... | | $ 6,109.00 |



***YOU** pay for obsolescence. Replacement pays for itself!*

**THE HEALD MACHINE COMPANY**

Subsidiary of The Cincinnati Milling Machine Co.

**Worcester 6, Massachusetts**

Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

HEALD

# The Most Important Difference is Down Inside

Differences *do* exist in circular steel blanks. We don't mean variations in size, thickness, etc.; we mean the differences in quality that are rarely apparent from mere surface inspection.

For years Bethlehem has made circular blanks by a method that both *forges* and *rolls* the steel in a single operation. Is this of any interest to the user? Does it bring about differences that are really important?

The answer is a big, emphatic yes! Bethlehem's unique method of manufacture insures such advantages as soundness, excellent grain flow, and very high strength. Because of these characteristics, the machinist can always do his job with complete confidence; there are no hidden flaws to snag the cutting tool, slow the work, or cause rejections.

If you build machinery that requires circular steel parts, especially parts for heavy-duty service, we strongly recommend Bethlehem blanks. They are suitable for such a long list of applications—flywheels, sheave and crane wheels, gears, turbine rotors, clutch drums, brake wheels, and many others. The blanks range in size from 10 to 46 in. OD, and they can be furnished heat-treated or untreated. Prices are fully competitive.

Write for a free copy of Booklet 216. Its numerous pictures and clearly written text will answer many questions that may occur to you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

**BETHLEHEM STEEL**

BETHLEHEM STEEL

Ford Motor Co. installs

# AMERICAN MONORAIL

in one of . . .

## WORLD'S BIGGEST CHROME PLATING PLANTS

Ford Motor Co. has installed an American Monorail system almost 9/10 of a mile long with 4 automatic track switches and 16 automatic lift or dip sections in the track. It serves two Udylite automatic plating machines, each of which is approximately 750 feet long.

A 3-ton Monorail system feeds carriers loaded with Ford bumpers into each plating machine and removes the carriers at the finished end.

Everything is automatic with provision for manual control at critical points.

This is another typical example of cooperation between Monorail, Udylite, and Ford engineers.

**AMERICAN MONORAIL**

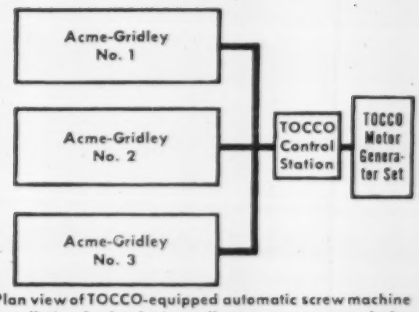
ENGINEERED MATERIALS HANDLING

OVERHEAD HANDLING EQUIPMENT

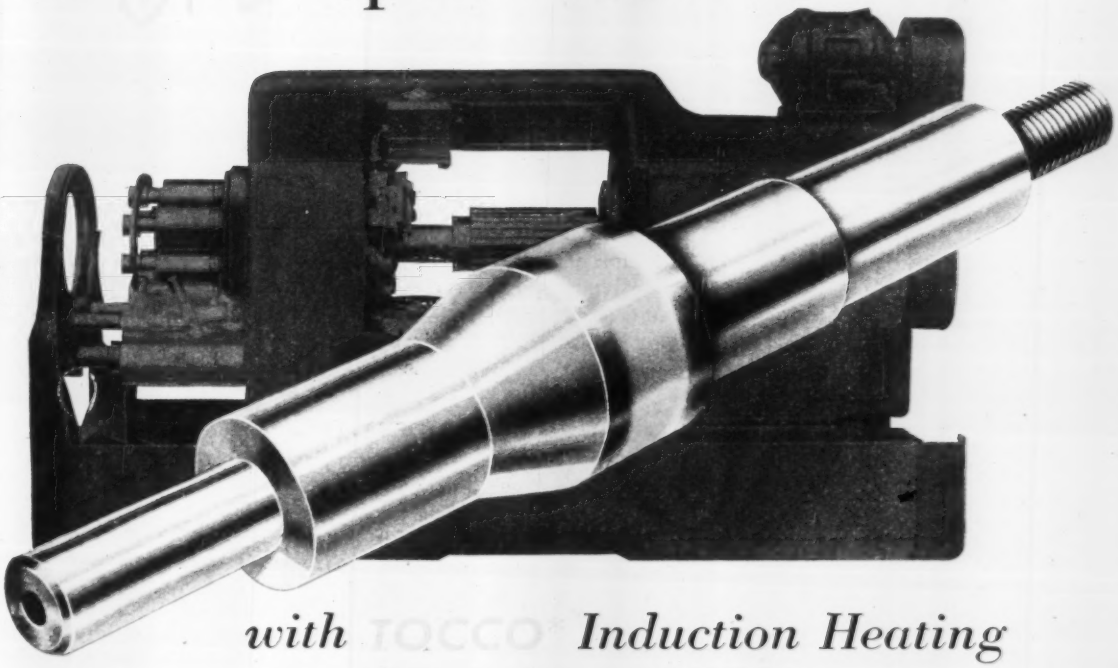
13102 ATHENS AVENUE
CLEVELAND 7, OHIO

MEMBER OF MATERIAL HANDLING INSTITUTE AND MONORAIL MANUFACTURERS ASSOCIATION

# Pump Shafts Machined and Hardened in ONE operation...




Plan view of TOCCO-equipped automatic screw machine installation for hardening collars on vane pump shafts.



## *with TOCCO® Induction Heating*

TOCCO-equipped 8-spindle Acme-Gridley Screw Machines at a large automotive manufacturer's plant produce vane pump shafts for power steering units in one completely automatic operation! The hardening and metal-working operations are combined on the same machine.* No additional handling—no hardening cost except power!

A TOCCO inductor, mounted at one station of each automatic, hardens collars on pump shafts after they have been completely machined at preceding stations on the same machine. Each installation consists of 3 automatic machines equipped with inductor coils powered by a 50 KW, 10,000 cycle TOCCO unit. Production from each installation is 360 shafts per hr.

Shafts are made of C 1144 and only the collar is hardened to prevent scoring the seal. TOCCO's rapid heating confines the hardened area to the surface of the collar leaving the rest of the shaft unaffected.

If your products or their components require heat treating, soldering, brazing or heating for forging, it will pay you to investigate TOCCO for better, faster production at lower unit costs.

*A Patented Process

JUST PUSH A BUTTON

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*Trade Mark Reg. U. S. Pat. Off.

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**The Ohio Crankshaft Co. • Dept. S-5, Cleveland 5, Ohio**

Please send copy of "Typical Results of TOCCO Induction Hardening and Heat Treating."

Name_____

Position_____

Company_____

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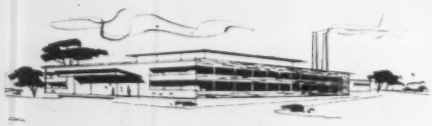
City_____ Zone____ State_____



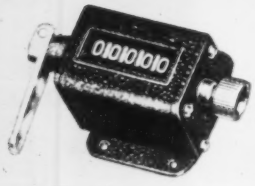
# No Two Plants

# are alike...

## but all can count on VEEDER-ROOT

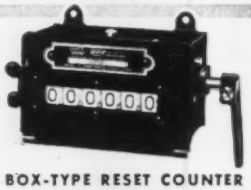
Sure, everybody's manufacturing problems are "different." But when these problems involve mechanical or electrical *Count*rol, they can *all* get the right answer from the same man . . . the Veeder-Root Distributor.

You will find that this man is tops in his field. He knows industry, and he knows how to adapt and apply standard Veeder-Root Counters to all types of production machines and processes, to give you exactly the facts-in-figures you need. If it's a question of quality, volume, cost inventory, production, wage or incentive payment, remember that *you're never sure unless you count*. And remember that the man you can always count *on* is your Veeder-Root Distributor. If you don't know who he is, just drop a line to D. G. Dresser, Veeder-Root Inc., Hartford 2, Conn.



**SMALL RESET COUNTER**

A compact, rugged reset counter for moderate duty in parts inspection, quality control, conveyors, machine tools, light presses, etc.
Dimensions: 1¾" long, 1 19/64" high, 1 7/16" wide.
Speed: Up to 1000 counts per minute.



**BOX-TYPE RESET COUNTER**

For punch press installations, conveyors, metal-working equipment, die casting, plastic-molding, rivet, spring and wire machining, or any installation requiring a heavy duty counter.
Dimensions: 4¼" long, 2 5/32" high, 3⅜" wide.
Speed: 500 counts per minute.

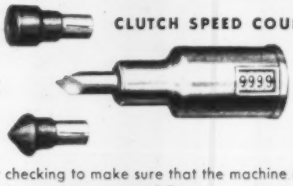
**RESET MAGNETIC COUNTER**

For remote indication of machine operation from plant to office.
Dimensions: 3 5/16" long, 2½" high, 1⅝" wide.
Speed: Up to 1000 counts per minute.
Coils: 110V-AC are standard. Other voltages are available. Panel mounting feature also available.

**HAND TALLY**

For quick spot-checks of production or performance.
Dimensions: 1 17/64" long (to end of reset knob), 1¾" deep, 2" high.
Counts one for each depression of the thumb lever, and resets to zero by a turn of the knob.

**CLUTCH SPEED COUNTER**



For checking to make sure that the machine is operating at the required R.P.M.
Dimensions: 3¼" long, ⅜" max. diameter. Non-Reset.
Internal clutch operates counter only when rubber tip is pressed against the shaft.

***Everyone can count on***

## VEEDER-ROOT

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Chicago • New York • Los Angeles
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This Week in STEEL The Metalworking Weekly

May 5, 1958
Vol. 142 No. 18

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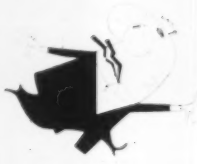

Check Your Fringe Costs—If you don't, you may find yourself snowed under. Conceived as emergency aid, fringes have already snowballed into a multibillion dollar industrial way of life.

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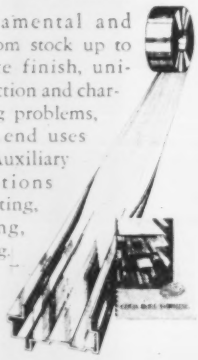

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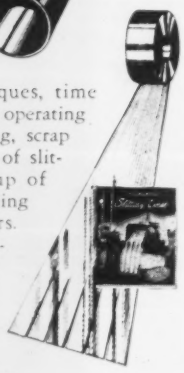

*Any or all of these books are free upon requests. Send for your copies today . . . Ask for them by title.*

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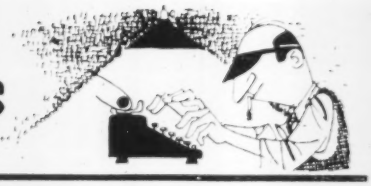
5502 Walworth Ave. • Cleveland 2, Ohio

ENGINEERING YODER MANUFACTURING COLD ROLL FORMING MACHINES

# behind the scenes



## A Matter of Definition

In most dictionaries weighing more than 2 lb, it is stated definitely that steel is a commercial form of iron containing carbon in any amount up to 1.7 per cent; an increased carbon content means cast iron. Metallurgists regard this definition as stark and puissant; on it they base their contention that steel is steel, or it ain't steel. They don't mess with Mr. in-between. That is why the term "semi-steel" sits ill with them.

Wherefore, when Metallurgical Engineer Walter Carroll, Republic Steel Corp., Cleveland, read in STEEL (Apr. 21, p. 164) that Strategic Materials Corp. and Koppers Co. Inc., Pittsburgh, were developing a process for the direct reduction of iron ore, he grew attentive; when he encountered the statement, " . . . the process can make 0.5 per cent carbon semi-steel," he trembled with academic agitation.

"I suggest," he wrote, "that you explain in your typical crystal clear verbiage the meaning of 'semi-steel.'"

Wow, Mr. Carroll! That's like being invited to sweep out the corners in a roundhouse. Let us say brightly that everyone has his own loathed expressions—for example, during the late war, ours was "near miss." Obviously, a blow could only hit or miss; if it nearly missed, it means that it almost missed but didn't; therefore, it was a hit. If one pursues these ambiguous qualifiers, one could go nuts. Perhaps "semi-steel" belongs in the same category.

## Weighted Mails

E. J. DeWitt, Wallace Supplies Mfg. Co., Chicago, is not satisfied with sending out ordinary form letters calling attention to his company's new flexible cutting tool, the Wallace "See-Saw." He sends out 1-in. slices of channel weighing little more than 4 lb and invites examination of the cut. The chunk that arrived in STEEL's editorial offices filtered—or, rather, crashed eventually into our coop. We were impressed by the mirrorlike surfaces left by the cut; they looked as though they had been machined. The edges, too, were sharp as knives.

Mr. DeWitt is so excited over his product he is willing to slice up his current inventory of channels and send the chunks to everybody who wants visual proof of how the Wallace "See-Saw" can produce quality cuts.

At this writing, the U. S. Post Office admits that it is staggering heavily under its load. We shudder to contemplate what will happen to the service if Mr. DeWitt's promotion sweeps the country. Incidentally, what do you suppose we can do with an 18-in. chunk of channel? On second thought, strike the question.

## Information, Please

The aggregate intelligence, experience, and sagacity of the folks who read STEEL is beyond measuring. Moreover, it is our opinion that this formidable reservoir of brains hasn't been even partially exploited—so we aim to tap it forthwith.

For a beginning, we would like to know what STEEL's Industrial Production Index figure will be for the week ending May 31. (Check the northwest corner of Page 69 for the current figure.) Associate Editor Robert Jaynes will print the answer June 9, but we want it in advance—with the 2 points beyond the decimal that Jaynes usually rounds off. For instance, it could be anywhere from 115.37 to 135.16. We'll buy a dinner for two for the reader who comes closest to the real figure. List your guess with ol' Shrdlu before May 15, lay in a supply of toothpicks, adjust your napkin, and hope for the best.

## Addenda

The General Steel Castings Corp., Granite City, Ill., has grounds to believe that it is a victim of a mass attack upon its identity; we referred to it twice (Gulp!) as "Granite Steel Castings," and we submit that they have every right to tweak our big red nose. In defense, we rise to state that the fault must lie with this typewriter; on many occasions we have observed that it can't even spell.

Dr. W. K. Bock, director of research, National Malleable & Steel Castings Co., Cleveland, posted the opinion that the teasers published here are much too simple. He was kind enough to sit down and prepare one himself, and if we had a couple of extra pages at our disposal, we'd be happy to print it. It takes up about two typewritten sheets, and if anybody cares to go to the mat with it, we'll be glad to send copies.

Here's one you can do in a wink. We have in mind a five-letter word. The first letter is the first letter of a word meaning a soliloquy; the second letter is the first letter of a word meaning a path described by a heavenly body; the third letter starts a word meaning artless; the fourth starts a word meaning to obliterate; the fifth starts a word meaning to submit. At your convenience, pass the word or what it means to:

Shrdlu

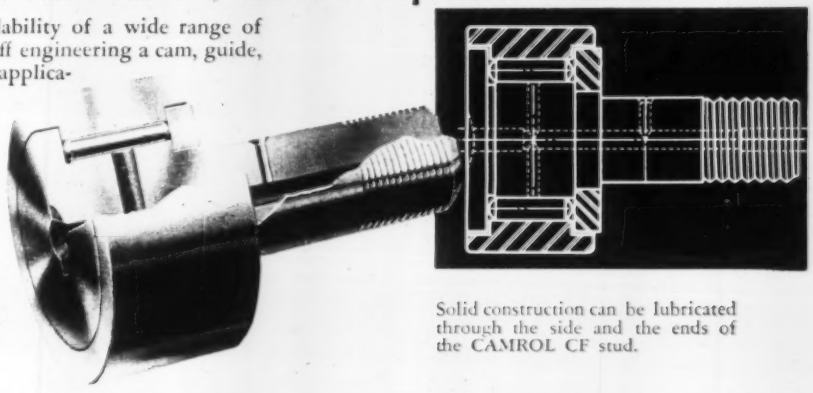
(Metalworking Outlook—Page 45)

# BEARING TIPS by McGill

## For convenience, with savings in time and cost

### Use McGILL® CAMROL Cam Followers instead of improvised units

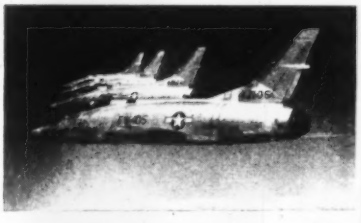
Simplification of design with availability of a wide range of standard bearings takes the strain off engineering a cam, guide, support or track roller bearing application. No need to "build up" a special unit when you can select the proper size standard CAMROL bearing engineered especially for the job. McGill's CAMROL bearing construction offers full type capacity, with provision for shock, in a compact precision unit. Specify CAMROL, the original cam follower, in either CF (with stud) or CYR (shaft mounting) series. Sealed and prelubricated bearing available also.



Solid construction can be lubricated through the side and the ends of the CAMROL CF stud.

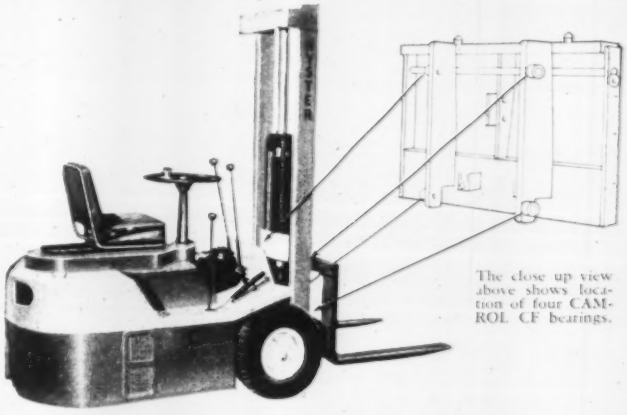
### YR bearings help F-100 Super Sabre make slower and safer landing

The supersonic speeds obtained by today's modern aircraft set up design problems not encountered with older, slower planes. The overall streamlined design required for speed in flight, for instance, necessitated finding ways of supporting the North American F-100 Super Sabre at low air speeds required for landing. A



series of slats on the leading edge of the wing, providing greater lift at lower air speed, was the answer. Each slat is supported by McGill CAMROL YR bearings — especially designed to permit shaft or yoke mounting. These long-life bearings carry the loads of these slats as they move on tracks during flight of the Supersonic F-100.

### CAMROL® CF bearings out-perform friction rollers as fork support bearings



The close up view above shows location of four CAMROL CF bearings.

Small size and high load-carrying unit construction with simplified lubrication are among principal benefits obtained by Hyster Company from use of CAMROL CF bearings as fork support rollers in its Hyster 20 and other lift trucks.

Two bearings ride up and down inside each vertical mast section to position the lift truck fork under load. Speeds are relatively slow but the crushing loads on each bearing are heavy.

In this particular application, the exterior surfaces of the bearings are treated with a black oxide finish. This provides corrosion-resistance which serves to augment maintenance-free operation, a characteristic of CAMROL bearing construction.

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Write for your copy of Catalog 52-A, a revised, 128-page Bearing Selection Guide.

*Insure performance with* McGILL®

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Precision Needle Bearings

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# SAVE WITH
# RELY ON
# COPPER

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*Rely* on Copper – whether it's cooling, heating or whatever your problem. *Think first of Copper's unique advantages!* Not only is it the best commercial heat transfer agent, not only does it resist corrosion . . . Copper is the best commercial conductor of electricity. Copper and its alloys are easy to work, form, draw, join, stamp, polish and plate. And Copper is in good supply to meet your demands today and tomorrow!

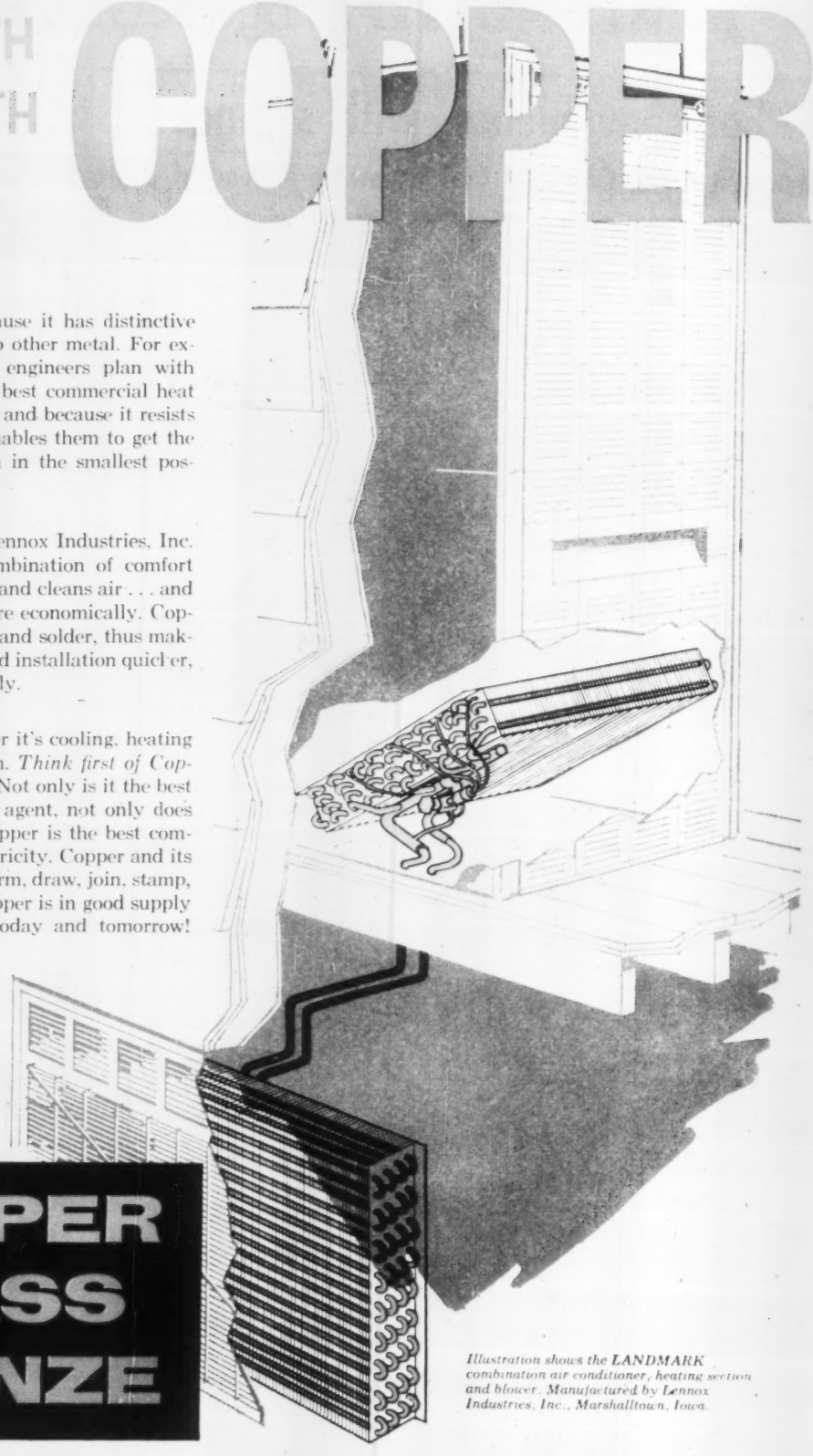

*Illustration shows the* LANDMARK *combination air conditioner, heating section and blower. Manufactured by Lennox Industries, Inc., Marshalltown, Iowa.*

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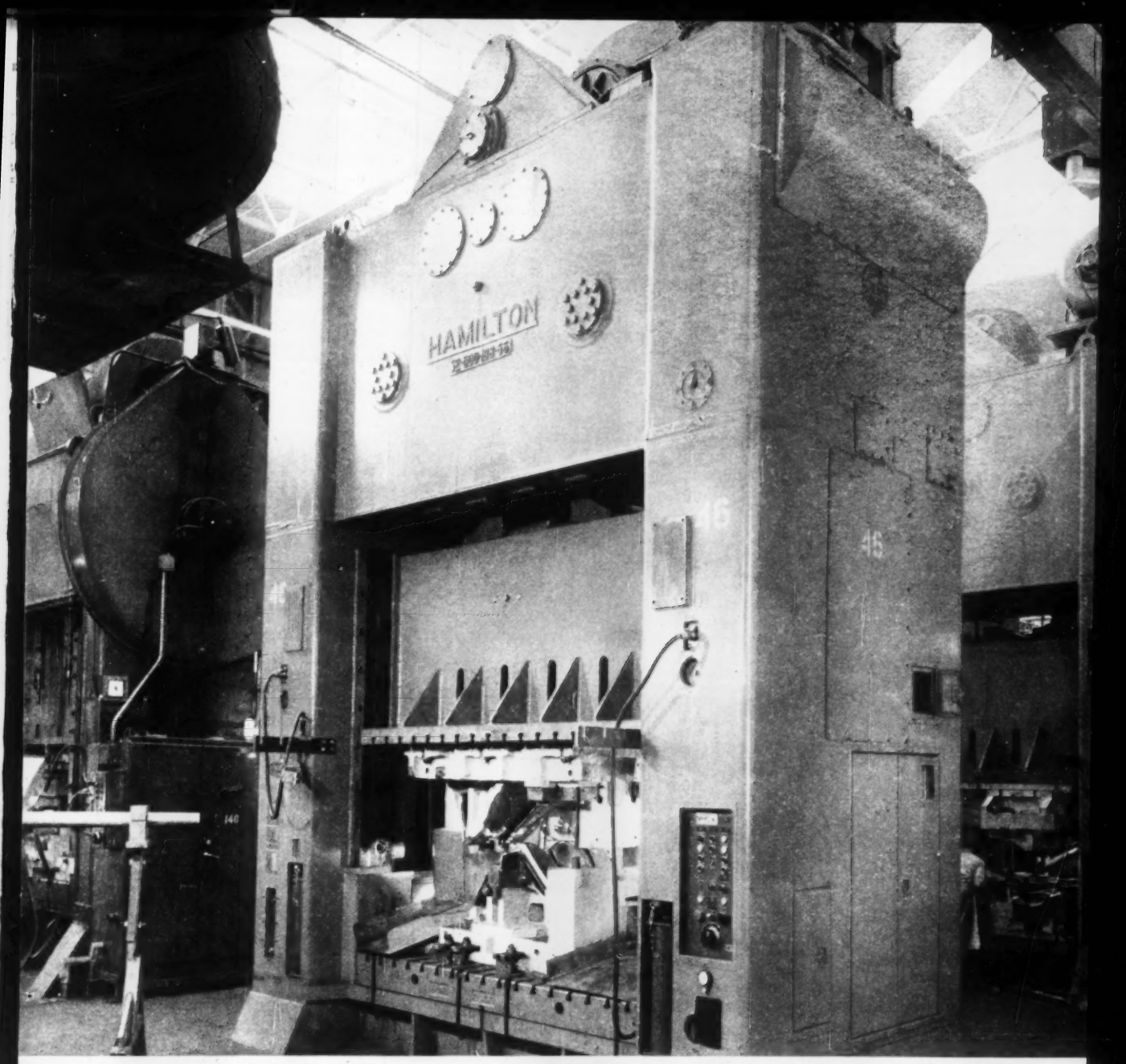


This versatile 600-ton Hamilton Eccentric Gear Press is currently turning out a wide variety of parts in a major automobile plant in Detroit.

# Why an eccentric gear press?

Hamilton Eccentric Gear Presses are ideally suited for heavy duty operations—particularly deep draws and other stamping operations where the tonnage is encountered well up on the stroke.

The eccentric and gear are integral and rotate on a short eccentric pin, as a result of which torsional and bending loads are negligible.

The many added features of Hamilton Eccentric Gear Presses guarantee greater production, improved stamping quality, and lower maintenance costs.

*Write to Dept. IE for Bulletin #13301, describing these machines*

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It's the new Torrington Verti-Slide, the first major innovation in the field of 4-SLIDE equipment in 50 years!

This machine was designed to meet a growing need for greater productivity and profitability in the cost-critical area of wire and strip forming.

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**THE TORRINGTON MANUFACTURING COMPANY**

TORRINGTON, CONNECTICUT · VAN NUYS, CALIFORNIA · OAKVILLE, ONTARIO

# LETTERS
## TO THE EDITORS

### Fine Statement of Bald Facts

Congratulations. Your concise, courageous article, "Paradox in Paradise" (Apr. 21, Page 55), is the finest statement of the bald facts I have been privileged to read in many months.

This temporary period of adjustment has been used by almost everyone and anybody to get on the so-called bandwagon. It is refreshing to know we still have people in responsible occupations who are willing to call the spade a spade.

F. W. Thiele

Vice President-Mfg.
American Planter Co.
Burr Oak, Mich.

### Research Director Likes Report

We would appreciate a reprint of the Program for Management article, "Managing Defensework for Profit" (Apr. 14, Page 125). It is particularly appropriate in view of present business conditions.

Dr. R. G. Ulrech

Director of Research-Engineering
Rochester Div.
Consolidated Electrodynamics Corp.
Rochester, N. Y.

• • •

It is informative and has many good pointers for our firm which is entering this area for future sales.

A. S. Novosad

Sales Manager
Gerbing Mfg. Corp.
Northbrook, Ill.

### Suggestions System Story

We would appreciate a copy of the article, "Listen to Your Employees" (Apr. 21, Page 68). We thought it extremely worthwhile.

J. L. Dwyer

Suggestion Co-ordinator
Brown-Lipe-Chapin Div.
General Motors Corp.
Elyria, Ohio

### Request for More Copies

Your article, "Figures Talk to Warehousers" (Oct. 21, 1957, Page 48), is so interesting and full of commercial meaning that I circulated it among our executive staff with the request that it be read and

(*Please turn to Page 12*)

HAYNES Alloys solve the *tough* heat problems

# JET UNITS
## take 1000 G's at 1500 deg. F.

Mounted to the tips of the rotor blades of a new type aircraft are small pressure jet engines encased in shells of HASTELLOY alloy X. In flight, these jet units are subjected to extremes in stress and heat. HASTELLOY alloy X was selected for the shell material because of its high strength at temperatures in excess of 1500 deg. F. and because it is readily formed and welded.

If you have a high temperature or a difficult design problem, contact our nearest sales office, or write HAYNES STELLITE COMPANY, Division of Union Carbide Corporation, General Offices and Works, Kokomo, Indiana. Sales Offices in Chicago, Cleveland, Detroit, Houston, Los Angeles, New York and San Francisco.

**XV-1 Convertiplane in history-making flight** ... HASTELLOY alloy X sheet was dished and welded to form the shell of the jet units mounted to the tips of the three rotor blades.

**HAYNES**
**ALLOYS**

**HAYNES STELLITE COMPANY**
*Division of Union Carbide Corporation*
Kokomo, Indiana

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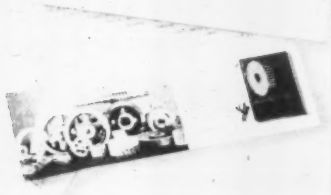

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- Engineering Data Section—more tables and data you want.

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**THE HORSBURGH & SCOTT CO.**
GEARS AND SPEED REDUCERS
5112 Hamilton Avenue
Cleveland 14, Ohio

# LETTERS

*(Concluded from Page 10)*

studied. It has been returned to me with several requests for individual copies. May I have six additional copies?

E. J. Williams
President
Armco Argentina S.A.
Buenos Aires, Argentina

## Excellent Financial Analysis

In the Mar. 31 issue, you published an excellent financial analysis of steel companies. May we have three copies for our internal use?

Phillip H. Smith
Director of Purchases
LaSalle Steel Co.
Chicago

## Advice Given on Deburring

I have read with a great deal of interest the article, "Deburring with Ultrasound," (Apr. 7, Page 102). We have many small metal stampings which we must deburr and would appreciate your advising us where we can get further information.

Irving T. Willard
President
L. D. Van Valkenburg Co.
Holyoke, Mass.

• *Contact Robert Stanton, general manager, Research Associates, P.O. Box 346, Alhambra, Calif.*

## Series Still Tops

Your 1958 Program for Management articles are maintaining the high quality of past programs. The second article in this series, "Production Control for Profits" (Mar. 17, Page 83), is excellent and of timely interest to our organization.

Jerome H. Kovarik
Industrial Engineer
Bureau of Ordnance, U. S. Navy
Washington

• • •

This is an excellent article on the functions of production control.

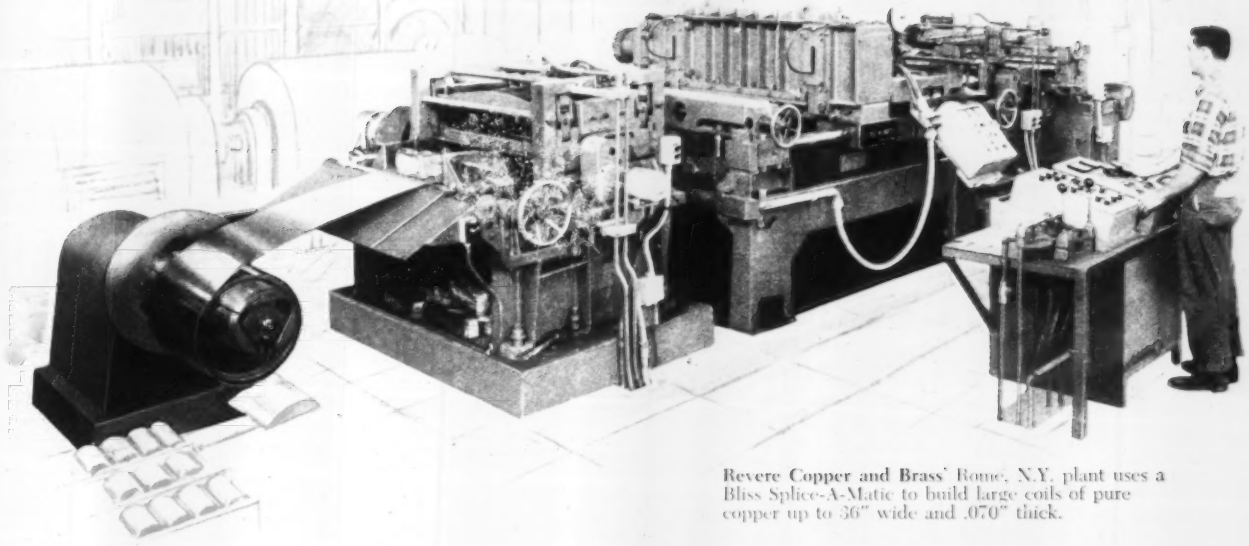
Rocco J. Pomponio
Production Control Dept.
Chase Brass & Copper Co. Inc.
Subsidiary of Kennecott Copper Corp.
Waterbury, Conn.

## Term Puzzles Reader

In your Mar. 10 issue, you list the distribution of finished steel in 1957 by market classification on Page 165. What markets would be included in the classification, "Unclassified," in your tool steel bar listing?

Benjamin C. Baldwin
Simonds Saw & Steel Co.
Fitchburg, Mass.

• *"Unclassified" is used in place of the American Iron & Steel Institute's term, "Shipments of Nonreporting Companies." Apparently the institute approximates shipments by mills not making statistical reports to it. For further information, write Don James, American Iron & Steel Institute, 150 E. 42nd St., New York 17, N. Y.*



**Revere Copper and Brass'** Rome, N.Y. plant uses a Bliss Splice-A-Matic to build large coils of pure copper up to 36" wide and .070" thick.

# How much could these machines reduce your coil handling costs?

Substantially, if your requirements are at all similar to those of Universal-Cyclops Steel Corporation or Revere Copper and Brass. Universal-Cyclops uses a Bliss Splice-A-Matic welder to cut handling costs in welding carbon and stainless steels, getting ideal welds in even the 300 series.

Revere Copper and Brass uses *its* Splice-A-Matic to build up the larger coils preferred by many of its customers . . . now also finds that these larger coils cut down-time and set-up time in its own subsequent operations.

Just about any weldable material and coil size is practical with the Bliss Splice-A-Matic. It's been used on most alloys in widths to 60" and with both coils and cut-to-length sheets. And complementing the Splice-A-Matic, Bliss offers a complete line of annealers, trimmers, pinch roll stands, levelers, reels, and other units to form a complete, modern coil build-up line.

To learn how others are automating their coil handling and cutting costs write today for complete information.

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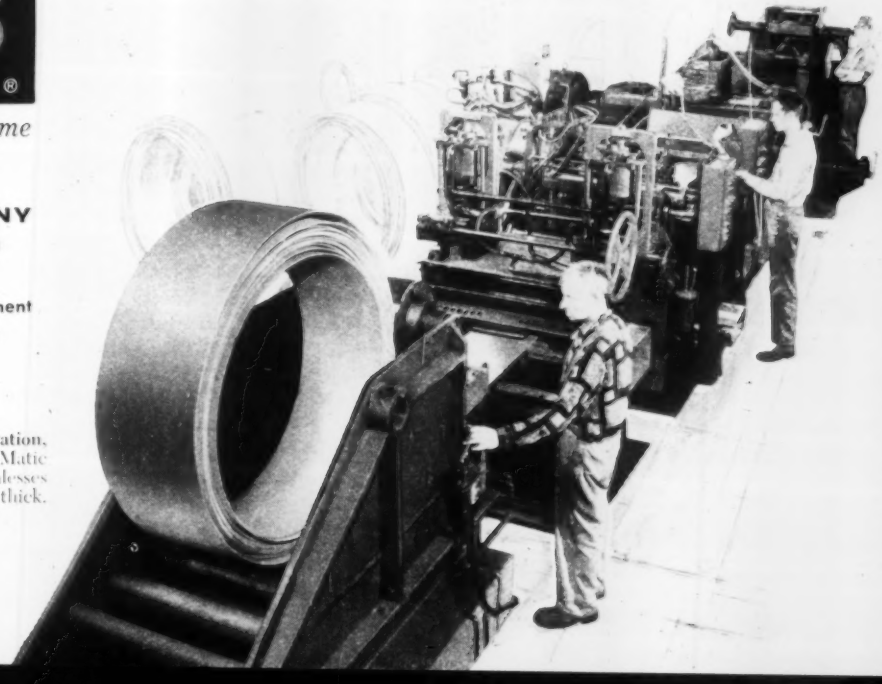
**Salem, Ohio**

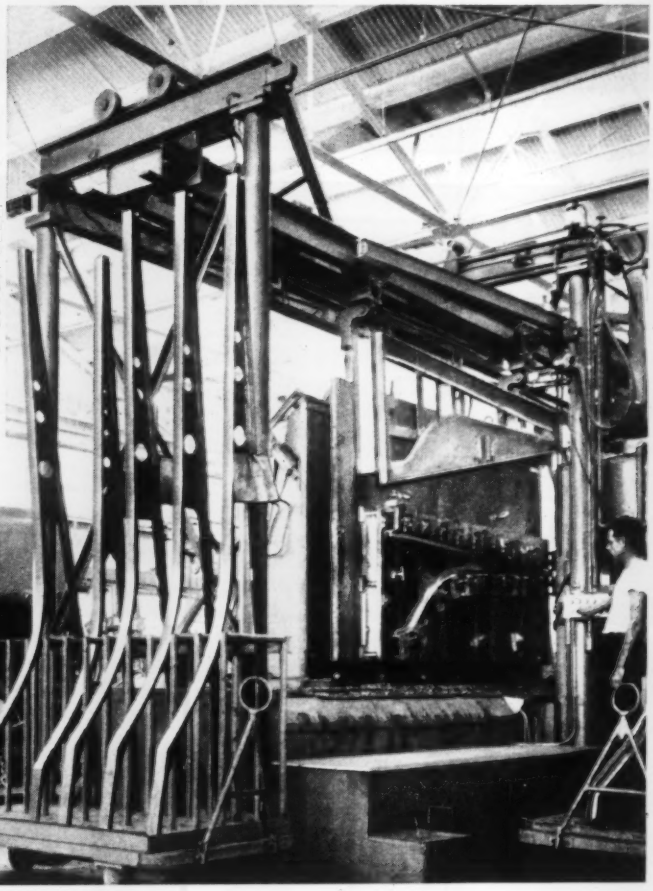
**Subsidiary: The Matteson Equipment Company, Inc., Poland, Ohio**



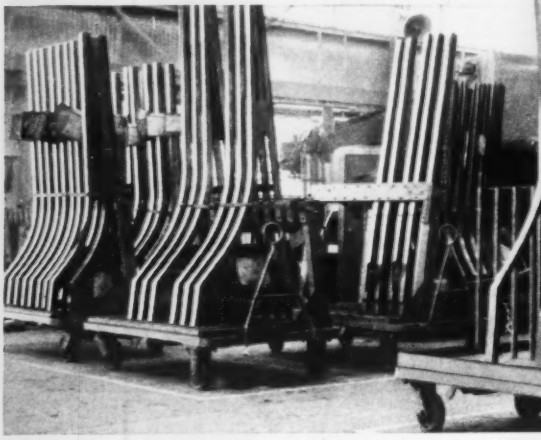
**At Universal-Cyclops Steel Corporation,** Bridgeville, Pa., a Splice-A-Matic successfully welds 300 Series stainlesses 18½" wide and 0.135" to 0.195" thick.

## Problem-Solving Products from Republic

# Increase Strength/Weight Ratios, Cut Costs, Save Weight, Maintain Dimensional Stability



Part of Rohr Aircraft's heat treating facilities where alloy steel flap tracks are put through a four-step cycle: (1) austenitizing, (2) marquench, (3) oil quench, (4) hot water rinse. Sequence maintains required dimensional stability.



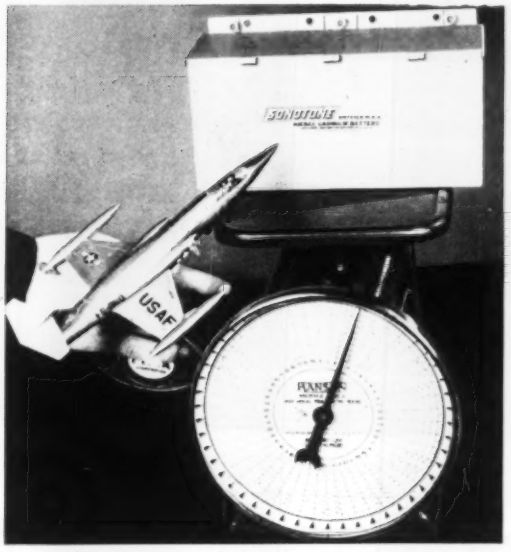
ALLOY STEEL MEETS HIGH STRENGTH, PRECISION REQUIREMENTS IN USAF BOMBERS. Steel weldments produced by Rohr Aircraft Corporation, Chula Vista, California, are an excellent example of the aircraft industry's constant effort to develop better and more economical methods of mass-producing large, high-strength structural aircraft components.

Rohr is currently using this weldment technique in manufacturing flap tracks for an Air Force bomber. The flap tracks are fabricated from AMS 6428 Alloy Steel, a type supplied by Republic. This fine steel provides a minimum tensile strength of 180,000 psi in the heat treated condition. Uniform response to heat treatment assures exceptionally good deep hardening characteristics—plus hard, wear-resistant surfaces.

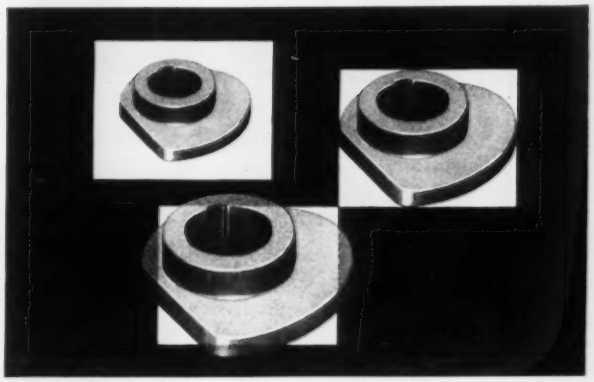
The exceptionally high strength-to-weight ratio of Republic Alloy Steel combined with the highest strength values permits the design of thinner, lighter track sections to save weight and hold down size without sacrifice of strength or safety.

Rohr's development of specialized tooling, welding, and heat treating techniques permits the production of these alloy steel weldments to close tolerances—a rigid aircraft engineering requirement. Costs are reduced by eliminating the need for expensive equipment and excess stock removal.

Specify Republic Alloy Steel for your parts that must be tough, strong, dependable. Our metallurgists are always available to help you in selection and processing. The coupon is your invitation to use this obligation-free service.




**REPUBLIC STAINLESS STEEL,** Type 302, cuts costs, saves weight, resists corrosion in jet aircraft storage battery cases made by Sonotone Corporation, Elmsford, New York. Stainless steel's exceptionally high strength-to-weight ratio and ability to withstand impact and vibration permits the use of a lighter gage, thus saving weight. Sonotone reports the metal's outstanding corrosion-resistance eliminates the need for painting the cases with no detrimental effect on service or appearance. Republic Stainless Steel also resists the wide extremes of temperature and atmosphere through which the batteries must operate. Mail the coupon for more facts on Republic ENDURO® Stainless Steel.



**REPUBLIC IRON POWDERS** with Controlled Dimensional Factor give your parts predictable dimensional characteristics after sintering. CDF means that in the presence of copper, Republic Iron Powder—depending on type—can be made to grow, shrink, or remain stable within acceptable tolerance limits. Tool engineers can design tools to part-print dimensions with the assurance that tolerances, transverse to the direction of pressing, can be held within ±.001 inches per inch. Fabricators can produce consistently uniform sinterings at faster rates and at minimum cost. Republic Booklet Adv-763 contains complete details. Send coupon for your copy.

**REPUBLIC TITANIUM ALLOYS** are used for weight saving and elevated temperature applications in the B-58 Hustler. The supersonic bomber is built for the Air Force by Convair, a division of General Dynamics Corporation, Fort Worth, Texas. These particular titanium alloys have minimum tensile strength of 130,000 psi and a minimum yield strength of 120,000 psi. Among the strongest alloys now being produced, they meet the demand for high strength to resist the effects of aerodynamic heating in supersonic aircraft, such as the B-58. Republic metallurgists and engineers, pioneers in the development of high strength-to-weight metals, are ready to help you apply titanium to your product or process.

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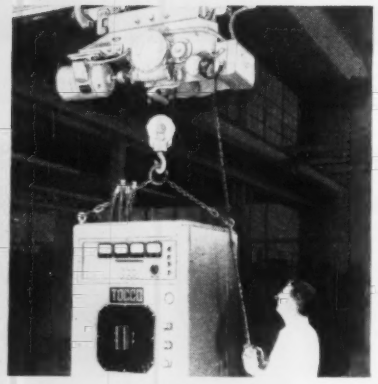

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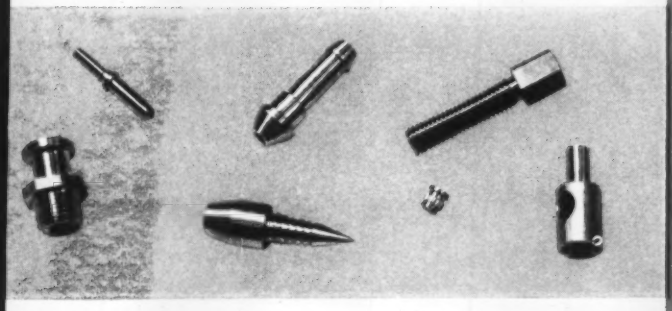

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At last—a tractor shovel designed especially for industry! Whether you handle bulk chemicals, sand, gravel, scrap or raw materials, you'll get more productive work at less cost per work unit with this new concept in a tractor shovel.

Yale designed it for tight areas—built it *compact* (only 117" overall length) so that it can maneuver in any aisle wide enough for a wheelbarrow. *Accelerates to an operating speed* of 8 mph. in 3.5 seconds and to a top speed of 13 mph. in 5.5 seconds. Exclusive *Yale Torque Transmission (fully automatic)* permits quicker, smoother starting, eliminates shifting, provides more power under load conditions—in a word, *speeds cycle operations*. This extra speed, plus the greatest carrying capacity of its class (full 2500 lbs.) means *up to 25% more work per hour*.

Yale's loader-linkage design offers unique advantages. Exclusive 45° *Ground-Level Tipback* insures the ultimate in loading action—and a grade-level carrying position to minimize spillage. Exclusive 6 foot *Dumping Clearance* is highest on any model of similar wheelbase. Bucket is *Automatically Self-Locating*. Operator merely lowers from full dump-position to ground-level—bucket automatically returns to digging position.

## a product of Yale's integrated design—these engineering advances are standard features

- Gasoline; LP-Gas powered
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- Extra strong heavy welded steel frame—greater safety, longer life
- Automatic bucket return to digging position
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- Short wheel base—minimum turning radius
- Sealed generator and distributor
- Balanced weight distribution
- Maximum speeds up to 13 mph.

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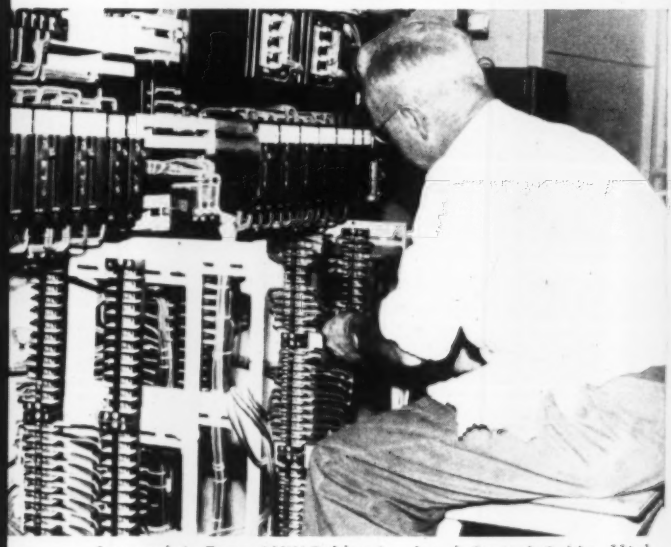
| Ozone-Resistant Rubber-Insulated 600-Volts | An ozone-resistant control cable also possessing proved moisture resistance, heat stability and long-aging characteristics. | | |
| **THERMOPLASTIC**—Insulated Control Cables | | | |
| Polyethylene-Insulated 600-Volts | A standard Anaconda thermoplastic control cable with excellent moisture and chemical resistance. Highly resistant to electro-endosmosis. A long-lived cable. | General-purpose control requirements of utilities and industrials. | Can be installed aerially, in conduits, underground in ducts—or buried directly in the earth. |
| DENSHEATH* Insulated 600-Volts. | A standard Anaconda thermoplastic control cable with excellent moisture and chemical resistance. Long-aging performance. | | |
| Anaconda Type PND* Polyethylene-Insulated—Nylon Conductor Cover 600-Volts** | An approved control cable with dependable chemical and abrasion resistance. Features small diameter. Long-aging properties. | General-purpose control requirements of utilities and industrials where space is a limiting factor. | Can be installed aerially, in conduit or underground in ducts. |
| Polyethylene-Insulated 1000-Volts | A thermoplastic control cable excelling in moisture and chemical resistance. Features heavy insulation thickness. Long-aging characteristics. | Station control requirements of utilities and industrials. | Can be installed aerially, in conduit, underground in ducts—or buried directly in the earth. |

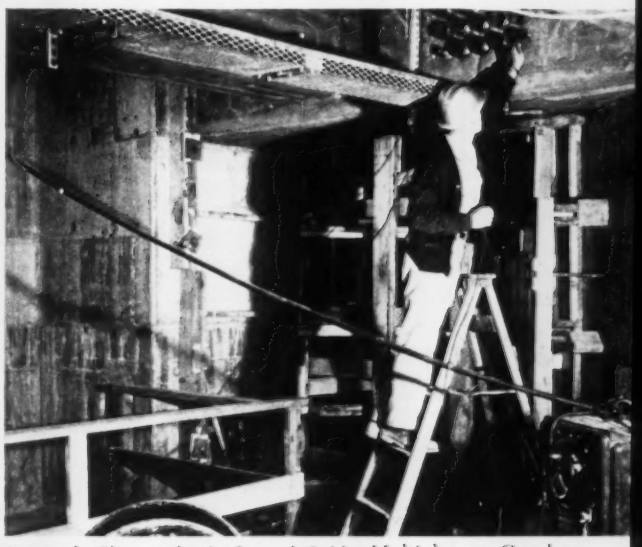
**IPCEA voltage rating is 300 volts.
*Trademark

Lead sheaths are furnished on rubber-insulated control cables if requested.
Interlocked armor is available for all types of control cable.

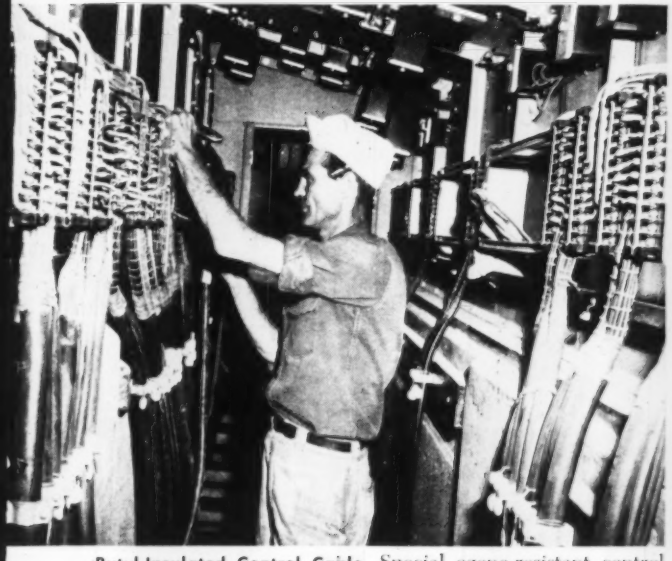
# with these Anaconda Control Cables



**Anaconda's Type ANW-Rubber-Insulated Control Cable.** High-quality product offering peak reliability, outstanding heat resistance. Cable is also highly resistant to moisture, acids, alkalies, other chemicals. Unusual overload capacity and long-aging characteristics. Individual conductor covering and over-all jacket of neoprene.



**Anaconda Thermoplastic Control Cable** Multiple-use. Can be installed aerially, in conduit, underground in ducts, or buried directly in earth. Available with polyethylene (600 or 1000 volts) or Densheath® vinyl resin (600 volts) insulation and Densheath over-all jacket. Densheath jackets over polyethylene-insulated conductors on request.



**Butyl-Insulated Control Cable.** Special ozone-resistant control cable. Individual conductor covering and over-all jacket of neoprene provide maximum insurance against moisture and mechanical injury.

**Anaconda Type PND Control Cable.** For general-purpose uses where space is a limiting factor. Allows installation of a 12-conductor cable in conduit carrying a 6 or 7. Individual conductor covering of abrasion-, oil- and gasoline-resistant nylon.

**Permanent Full-Color Coding** on rubber cables, by means of Anaconda's rubber-base coating, assures quick and positive circuit identification. Coding by surface printing, which conforms to IPCEA standards, also available. On thermoplastic cables, full-color coding with pigmented insulation and surface printed coding are likewise offered.

For full information on any of Anaconda's complete line of control cables – including cables engineered for more specialized control requirements – see your Anaconda distributor or the Man from Anaconda. A comprehensive technical booklet on Anaconda Control Cables is yours for the asking. Write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

*Reg. U.S. Pat. Off. 5832

LIVE BETTER ELECTRICALLY

SEE THE MAN FROM **ANACONDA**®

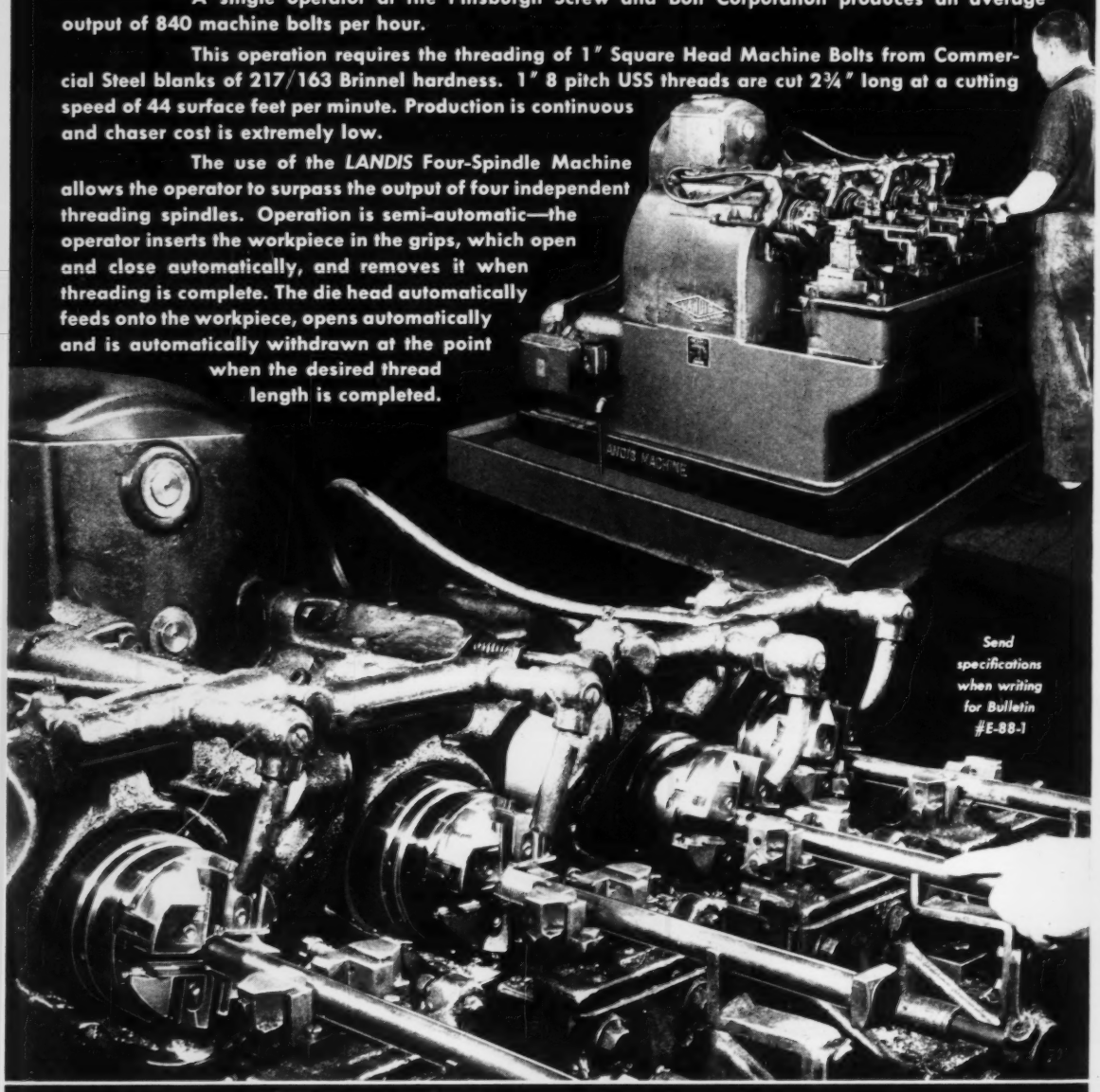
FOR **CONTROL CABLE**

# One Machine Bolt Threaded Every 4⅓ Seconds... WITH THE LANDIS 4-SPINDLE SEMI-AUTOMATIC THREADER

A single operator at the Pittsburgh Screw and Bolt Corporation produces an average output of 840 machine bolts per hour.

This operation requires the threading of 1" Square Head Machine Bolts from Commercial Steel blanks of 217/163 Brinnel hardness. 1" 8 pitch USS threads are cut 2¾" long at a cutting speed of 44 surface feet per minute. Production is continuous and chaser cost is extremely low.

The use of the *LANDIS* Four-Spindle Machine allows the operator to surpass the output of four independent threading spindles. Operation is semi-automatic—the operator inserts the workpiece in the grips, which open and close automatically, and removes it when threading is complete. The die head automatically feeds onto the workpiece, opens automatically and is automatically withdrawn at the point when the desired thread length is completed.



*Send specifications when writing for Bulletin #E-88-1*

**LANDIS *Machine* COMPANY · WAYNESBORO PENNSYLVANIA**

## CALENDAR
### OF MEETINGS

**May 7-17, United States World Trade Fair:** New York Coliseum, New York. Information: United States World Trade Fair, 331 Madison Ave., New York 17, N. Y.

**May 8-9, National Association of Sheet Metal Distributors:** Spring convention, Sheraton-Blackstone Hotel, Chicago. Association's address: 1900 Arch St., Philadelphia 3, Pa. Executive secretary: Thomas A. Fernley Jr.

**May 8-9, Refractories Institute:** Annual meeting, Homestead, Hot Springs, Va. Institute's address: 1801 First National Bank Bldg., Pittsburgh 22, Pa. Executive secretary: Avery C. Newton.

**May 8-10, American Material Handling Society:** Material handling and industrial packaging show and technical conferences, Great Western Exhibit Center, Los Angeles. Information: J. M. Druliner, Society Show Chairman, 2807 Sunset Blvd., Los Angeles 26, Calif.

**May 11-14, American Steel Warehouse Association:** Annual meeting, Riveria Hotel, Las Vegas, Nev. Association's address: 540 Terminal Tower, Cleveland 13, Ohio. Executive secretary: Robert G. Welch.

**May 11-14, Automotive Engine Rebuilders Association:** Annual meeting, Sheraton-Park Hotel, Washington. Association's address: 901 Roosevelt Bldg., Indianapolis 4, Ind. Executive vice president: R. G. Patterson.

**May 11-14, Copper & Brass Research Association:** Annual meeting, Homestead, Hot Springs, Va. Association's address: 420 Lexington Ave., New York 17, N. Y. Managing director: T. E. Veltfort.

**May 11-14, National Association of Purchasing Agents:** Annual meeting and exhibit, Conrad Hilton Hotel, Chicago. Association's address: 11 Park Place, New York 7, N. Y. Secretary: G. W. H. Ahl.

**May 12-14, American Management Association:** General management conference, Commodore Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

**May 12-15, Oil & Gas Power Division, American Society of Mechanical Engineers:** Annual conference, Bellevue-Stratford Hotel, Philadelphia. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: C. E. Davies.

**May 12-16, Southwestern Metal Exposition & Congress:** State Fair Grounds and Statler Hilton Hotel, Dallas. Sponsor: American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio. National secretary: W. H. Eisenman.


# Is the Answer
## to your production problem

2nd Edition of

**LOGAN'S FAMOUS KEY BOOK**

Often a problem that we regard as "strictly our own" has already been solved by others under similar conditions. Sometimes it's even common. That's why it pays to know what others are doing.

Perhaps the new Logan Key Book will help you iron out materials handling wrinkles adding unnecessary time and labor to production costs. Logan is happy to share its experience with you in the form of this generously illustrated booklet of authentic case histories—24 in all with 50 actual installation views.

Why don't you write for your copy today?

**LOGAN CO., 535 CABEL ST., LOUISVILLE 6, KY.**

**Logan Conveyors**

# *the beverage bar with a "brain"... of Stainless Steel*

The "brain" in this coin-operated soda dispenser is a valve that works round the clock to see that you get soda . . . or your money back.

It's an ingenious unit that automatically shuts off if the system fails — or the tank is emptied. Then too, it provides a device that bleeds air after each refill . . . and a precise mechanism that equalizes pressure to assure a uniform drink. Sanitary and corrosion-proof, all its working parts are made of stainless steels — not just one steel, but *four*.

The plunger and stop are Type 430F bar (magnetic) . . . the spring is 302 wire (non-magnetic) . . . the probe is 303 bar (machinability) . . . and the cylinder is 304 *welded* tube (economy). Despite this mixed requirement, *all* 4 grades are supplied *overnight* by Frasse.

You'll find it simpler, when working with stainless steels, to work from Frasse warehouse stocks. The wide range of sizes, shapes and analyses, so quickly available from this single source, is a time and effort saving convenience. For stainless steels . . . *always* call Frasse *first*.

***Call FRASSE*** ***st***

***for***

COMPLETE

STAINLESS STEEL SERVICE

| | |
|---|---|
| **Bars** | **Wire** |
| **Forgings** | **Tubing** |
| **Sheets** | **Pipe** |
| **Strip** | **Fittings** |
| **Plates** | **Valves** |

AMERICAN STEEL WAREHOUSE ASS'N

YOUR STEEL SERVICE CENTER

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**PHILADELPHIA 29, PA.**
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# UNITED®

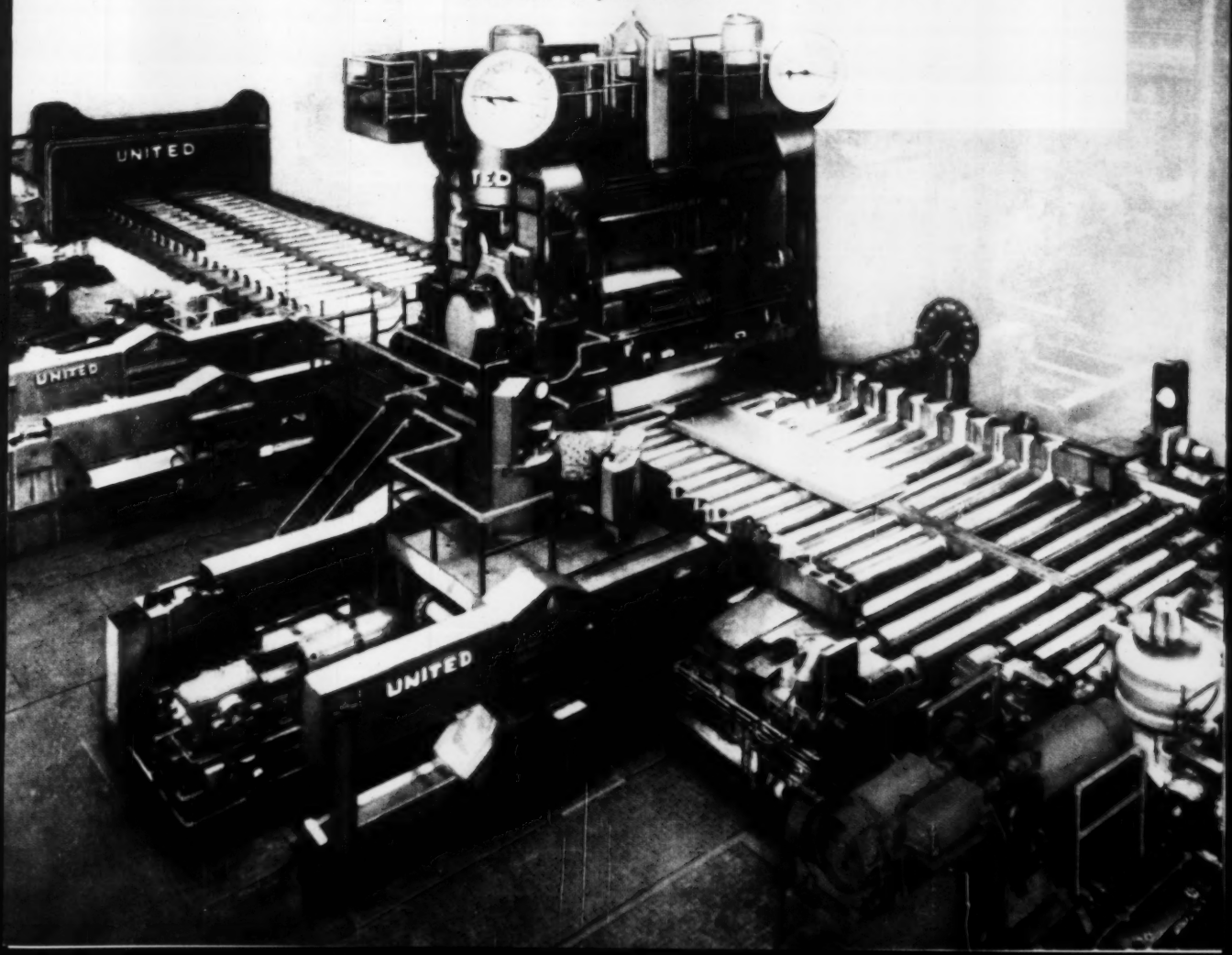
## 160" MILL FOR ROLLING ALUMINUM PLATE

UNITED ENGINEERING AND FOUNDRY COMPANY
PITTSBURGH, PENNSYLVANIA

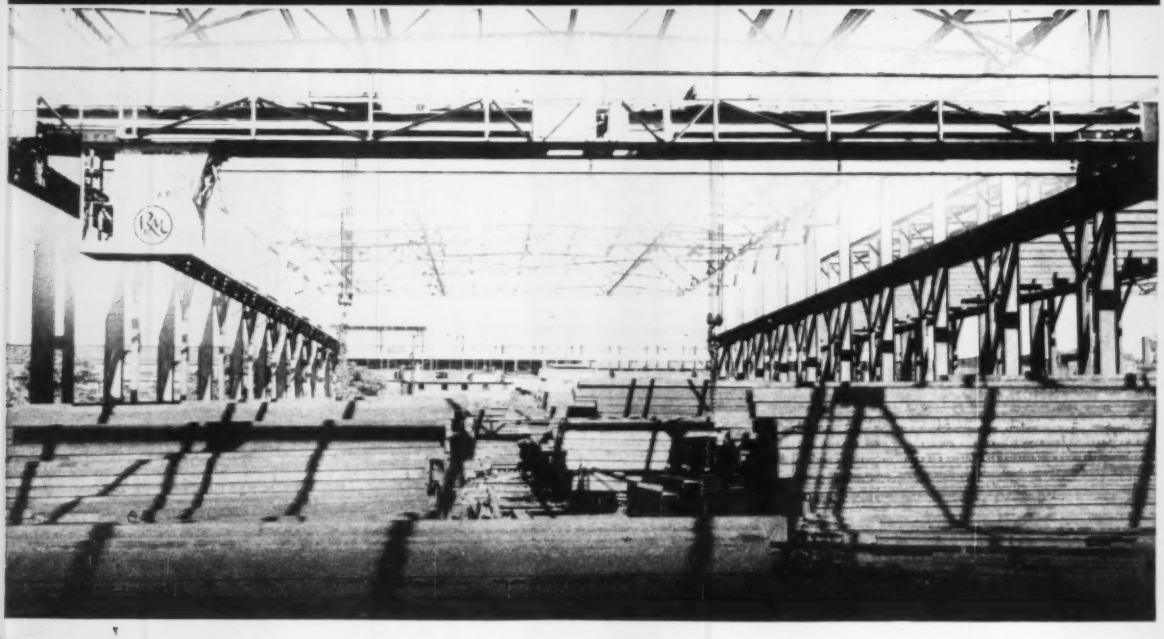
*Plants at* Pittsburgh, Vandergrift, Youngstown, Canton, Wilmington

SUBSIDIARIES: Adamson United Company, Akron, Ohio; Stedman Foundry and Machine Co., Inc., Aurora, Indiana

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.



# cranes that stay new



Robbins & Myers cranes have long, productive lives because they combine conservative engineering with quality construction materials—a combination that doesn't permit short-cut manufacturing. Carefully controlled standards are maintained for bridge deflection under load, rigidity, service factor. Your R & M crane is completely assembled and tested before shipment, then match-marked and doweled for perfect reassembly in your plant. R & M builds standard cranes with capacities to 10 tons, spans to 65 feet; larger capacities and longer spans are available in custom designs.

Illustrated above: 15 ton capacity, two hoist, cab controlled crane. Span: 74½ feet. Bridge control: 6 step variable speed to 250 fpm. Trolley control: 4 step variable speed to 125 fpm.

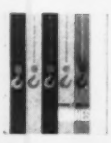
Send today for our new bulletin describing single and double girder cranes in top-running and underhung designs.

*Robbins & Myers, Inc., Hoist & Crane Div., Springfield, O.*

take it up with

**ROBBINS & MYERS**

hoists cranes



*Request Bulletin 900*

*

**Stainless Steel welding information:**

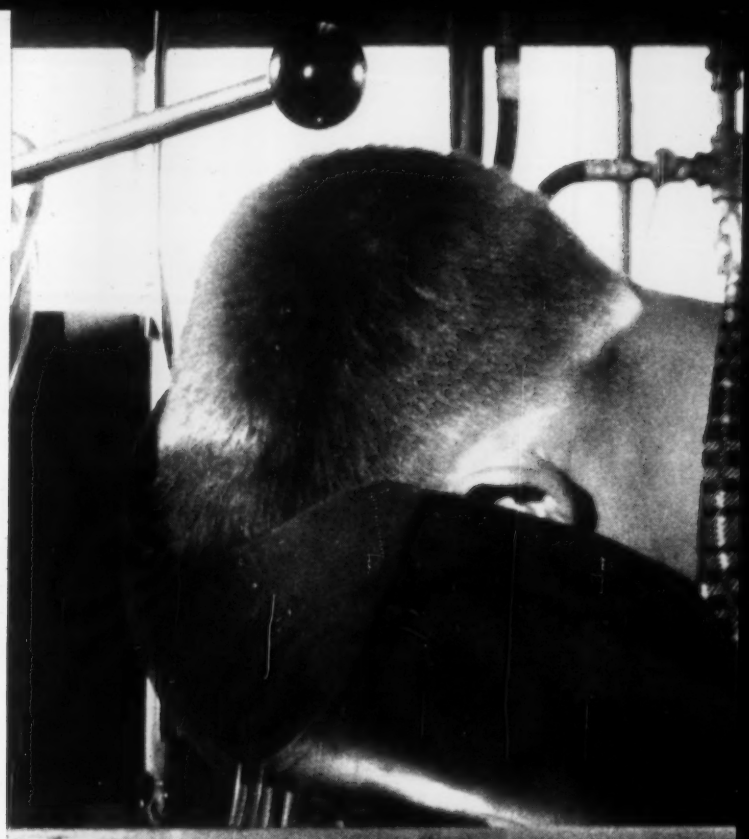
# *Keep it clean

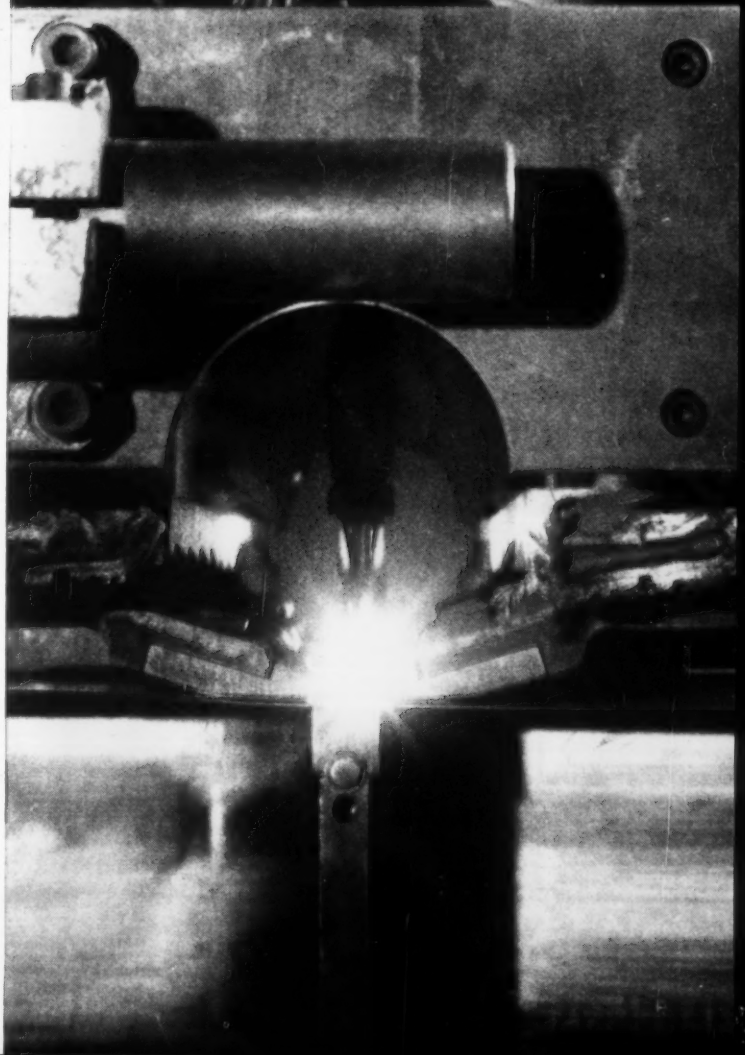
**You get strong, tight joints** when you weld Stainless Steel, but you have to make sure the surfaces have been thoroughly cleaned. Any grease, oil or dirt on the welded surface might affect the corrosion resistance of Stainless.

When you want to repair a crack, it's a good idea to chip out the cracked area completely so you're sure that only clean, solid metal is exposed. And remember, there are a lot of different kinds of Stainless Steel and they don't all react the same way. Be sure you handle each job right—check the "Stainless Steel Fabrication Book" before you start. If you don't have a copy of this 130-page guide, write on your company letterhead to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

**Remember:** Stainless Steel isn't difficult to fabricate; it's just different.

*USS is a registered trademark*





United States Steel Corporation—Pittsburgh
American Steel & Wire—Cleveland
National Tube—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Warehouse Distributors
United States Steel Export Company

**United States Steel**

USS

# Fastener Facts

by Paul Tunison, Chief Engineer — Judson L. Thomson Mfg. Co.

## FASTENING WITH DEEP-DRILLED RIVETS

### When to specify:

You specify deep-drilled rivets (sometimes called tubular rivets), when you want low-cost, permanent fasteners for leather, plastics, rubber, wood, canvas and other easily-pierced, compressible materials.

Millions of Thomson Deep-Drilled Rivets are used each year by leading manufacturers of leather goods, luggage, shoe skates, baseball shoes, camera cases, hand bags, golf bags, and other sporting goods. These self-piercing rivets are used to replace or reinforce stitching.

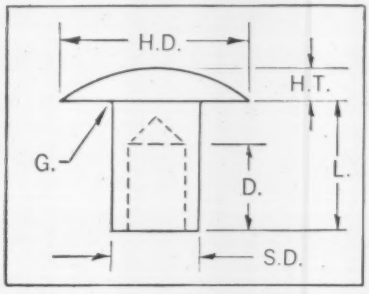
### How you benefit:

With Thomson Deep-Drilled Rivets, you can eliminate the cost of pre-punching or pre-drilling holes in materials. Drilled to a depth up to $\frac{1}{2}$" they punch their own holes through the material and compress it within their hollow shanks. Clinched by high-speed automatic rivet-setting machines, which can be operated by unskilled help, they keep assembly time and costs at a minimum.

### What dimensions:

**Hole Depth** (D) of standard deep-drilled rivets always exceeds shank diameter, but never exceeds $\frac{1}{2}$". Exact depth is determined by the compressibility of materials to be fastened and by the clinch requirements of the application. A rule of thumb is to add shank diameter to the thickness of the compressed assembly. The safe rule is to have tests run on actual samples.

**Head Diameter** (H.D.) ranges between 1.75 and 2.75 times shank diameter for rivets produced by single-blow heading machines. Head diameters up to $3\frac{1}{2}$ times shank diameter are possible . . . at higher cost.



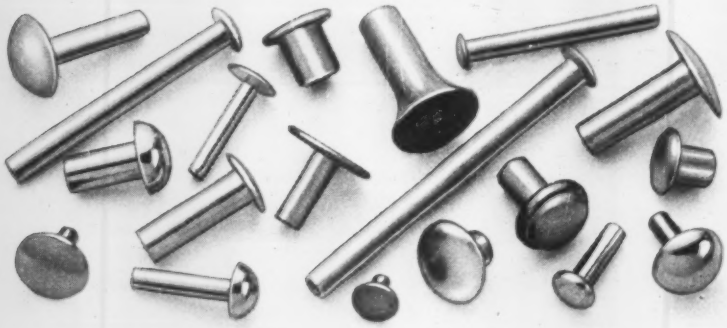

**Head Thickness** (H.T.) ranges from 0.3 to 0.6 times shank diameter, depending on head shape: oval, flat countersunk, ideal, beveled flat countersunk or cone.

**Shank Diameter** (S.D.) of standard sizes ranges from .040" to .320".

### How Clinched:

You have a choice of two clinches with Thomson Deep-Drilled Rivets, depending on the required strength: roll clinch or scored clinch. Roll clinch, produced by correctly-shaped anvils (either solid or spring pilot type), is stronger. Scored clinch is specified when clinch must be turned into the surface of the work.

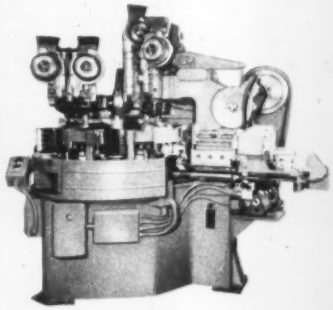
Thomson Deep-Drilled Rivets are also clinched inside caps which match rivet heads to improve the appearance of the assembly and increase the strength. Washers (burrs) are also used to prevent the clinch from tearing loose by giving a stronger bearing against soft surfaces.



## DESIGN PRODUCTION & PURCHASING DATA

### High Speed Setting Machines:

The inherent economy of rivets as fasteners is multiplied by high-speed assembly with automatic rivet-setting machines. Thomson has developed more than 250 styles of machines which can do thousands of fastening jobs . . . with or without adaptations. Multiple rivet-setting heads, special work handling and loading fixtures are optional features that accelerate riveting operations. Thomson selects and custom-tools the proper machine to speed assembly and reduce costs. Available on a sale or lease basis.



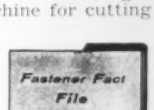
Automatic Rivet-Setting Machine

### Design and engineering service:

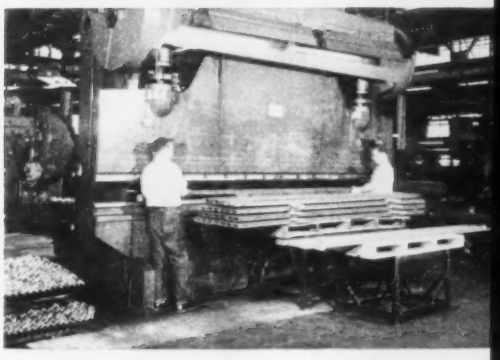
Thomson analyzes your company's fastening problems and makes specific rivet and machine recommendations . . . at your request. When called in early, we can often meet your requirements with standard rivets and machines that eliminate the need for costly special fasteners and tooling. For work in progress, submit sketches, prints or samples for suggestions and quotations.

### Free "Fasteners Fact File"

Our new manual on all phases of riveting belongs in the hands of everyone who specifies or buys fasteners. It covers rivet types, applications, materials and other factors that determine the selection of the right design, rivet and machine for cutting fastening costs. Request your copy today. Write: Judson L. Thomson Mfg. Co., Department S, Waltham 54, Mass.




JUDSON L. THOMSON MFG. CO., WALTHAM 54, MASS.



*These workmen are using Youngstown Yoloy "E" high-strength steel to fabricate belt rails—a component of DF Loaders—at Evans Products Co.*

# Accent on Excellence

## Youngstown Yoloy "E" high-strength steel

EVANS DF LOADER . . . *Locks in lading, eliminates damage and dunnage*

Two DF* Loader-equipped railroad cars easily do the work of three standard box cars. That's because DF cars (31,000 now in service) can be loaded to capacity—earn greater revenue for railroads.

Portions of Evans DF Loaders are fabricated from Youngstown's Yoloy "E" Angles and Hot-Rolled Yoloy Sheets by Evans Products Company, Plymouth, Michigan. All Yoloy Steels are produced to meet a wide range of applications, where high strength and corrosion-resistance are of prime importance.

Wherever high strength steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

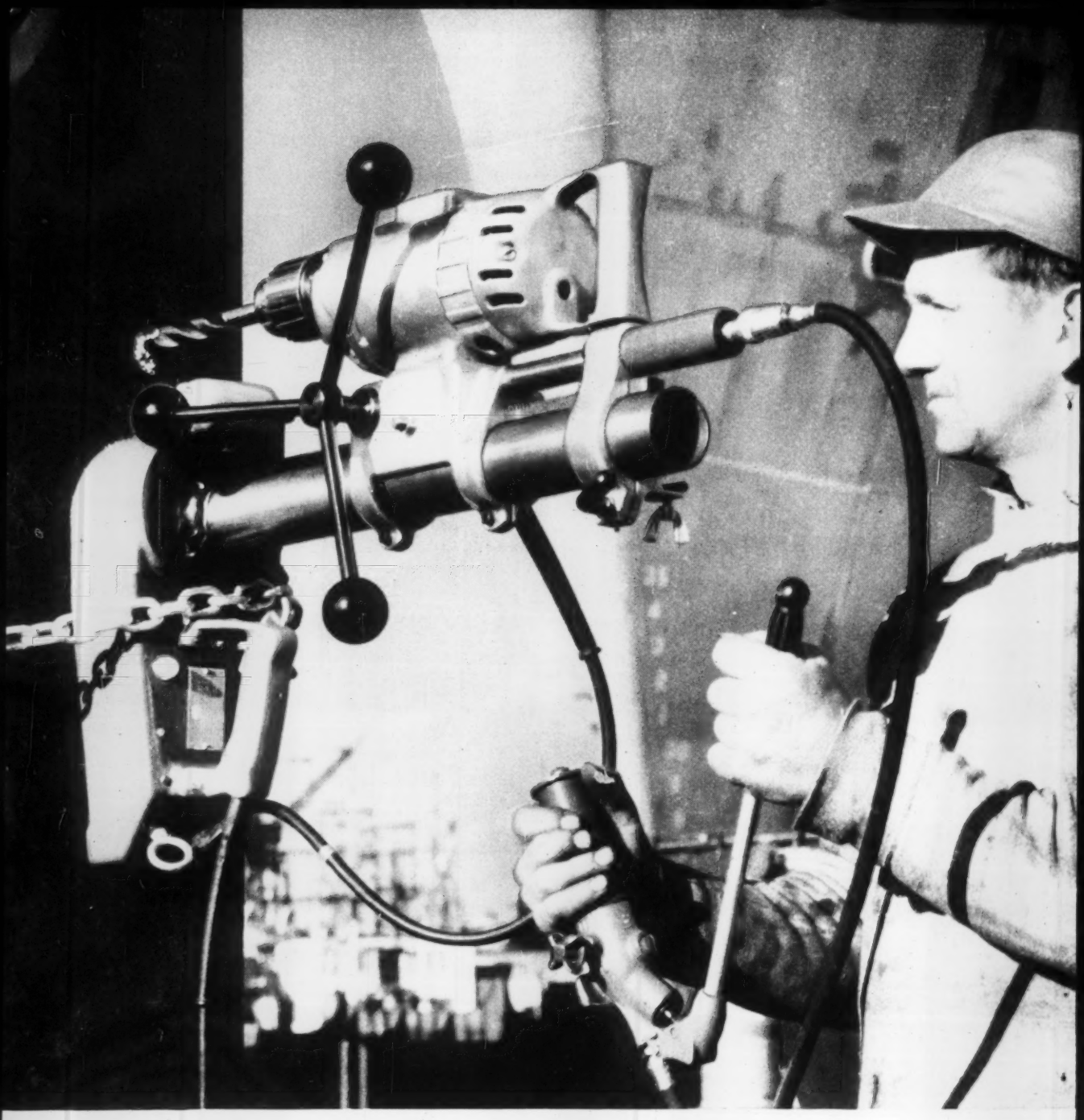
**DF is a trademark of Evans Products Company.*

*Send for free technical bulletin on Youngstown Yoloy "E" Steel.*

QUALITY YOUNGSTOWN SERVICE

THE **YOUNGSTOWN** SHEET AND TUBE COMPANY

*Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio*



# Sticks like glue . . . works in

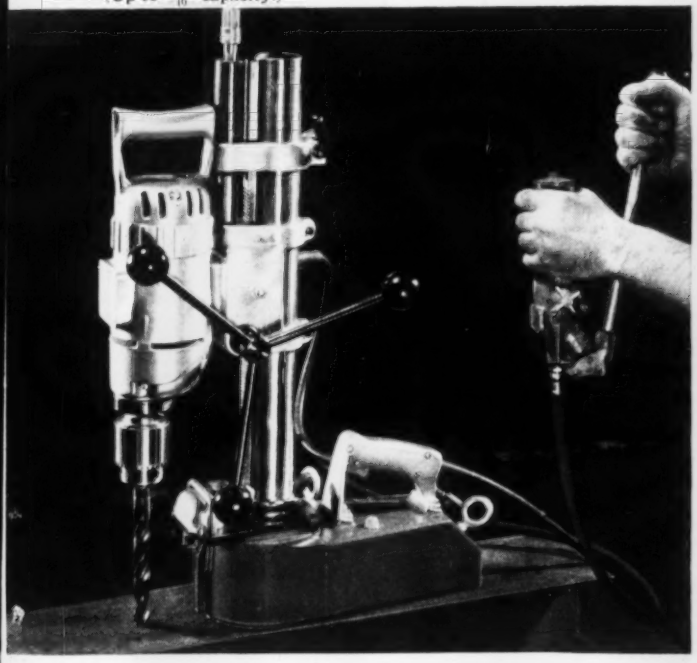
You are looking at a Black & Decker Magnetic Drill Press at work 15 feet off the ground! No operator holds it—it *holds itself* to the work with over a thousand pounds of magnetic power. No operator touches it—he feeds it precisely into the work with fingertip pressure on the exclusive B&D Hydra-Power Feed.

The new B&D Magnetic Drill Presses are truly so unusual they must be seen to be appreciated. They come in two capacities—¾" and 1¼". They are complete precision units—not attachments. They drill, ream and tap upside down, on their sides or upright. They are ideal for tool shops, steel fabricators, heavy machinery, maintenance . . . anywhere you have to take a drill press to the work. THE BLACK & DECKER MFG. Co., Dept. 2005, Towson 4, Maryland. (In Canada: Brockville, Ontario.)

**See the Features of the NEW Black & Decker Magnetic Drill Presses**

1¼" MAGNETIC DRILL PRESS works high in the air upside down! (Up to 1¼" capacity.)

¾" MAGNETIC DRILL PRESS goes to the work, drills upside down, too! (Up to $\frac{13}{16}$" capacity.)



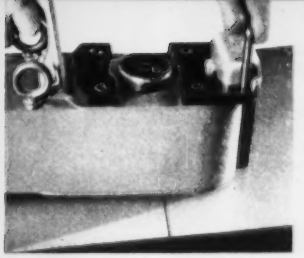
# any position!

Leading Distributors Everywhere Sell

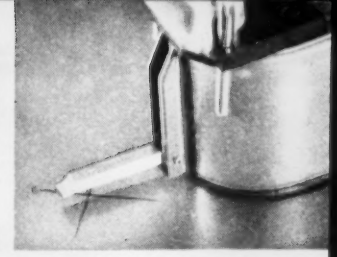
**Black & Decker®**

Quality Electric Tools . . . Power-Built for top performance

Look Under "TOOLS-ELECTRIC" in 'Yellow Pages'

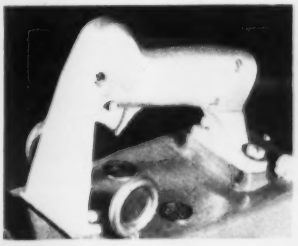


★ MULTIPLE USE! Magnetic Unit of 1¼" Press may be used to hold pieces for butt welding, etc!

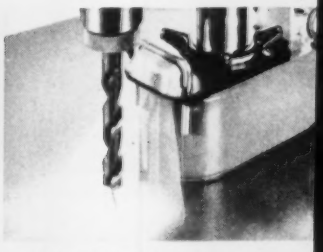


★ CLOSEST TOLERANCES! Drill Point Locator provides accuracy never before possible! Built into magnet.

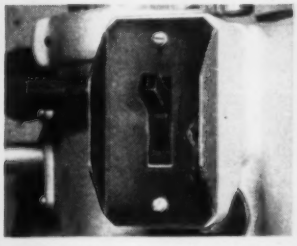
## Check these exclusive Black & Decker features!



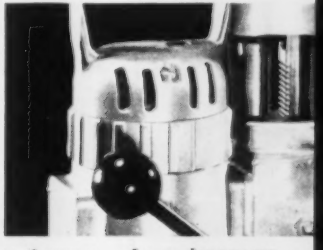
★ SAFETY-GRIP SWITCH keeps magnet always "on" after operator releases switch trigger—another safety plus.



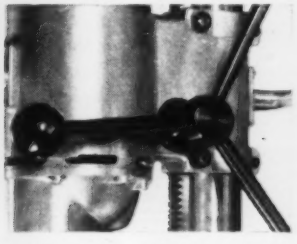
★ WORK AREA BRIGHTLY LIT by exclusive headlight. Special ruggedized bulb withstands hard usage.



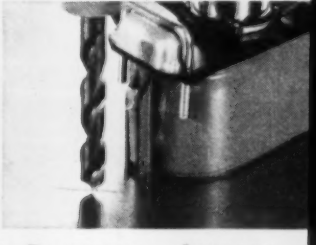
★ LONGER LIFE—INCREASED SAFETY results from built-in time delay in 1¼" Reversing Switch. Prevents motor being reversed too rapidly.



★ LONGER LIFE—INCREASED SAFETY as Reversing Switch of ¾" Press is turned. Switch goes to "neutral" then "on" again in other direction.



★ HIGHEST ACCURACY results from unitized construction of drill press—cannot work loose, no side play . . . Drill Press is an integral unit.



★ DRASTICALLY INCREASED SAFETY due to location of magnet near drill point. Provides maximum magnetic power at drill pressure point.

**MAIL COUPON TODAY FOR A FREE DEMONSTRATION!**

**THE BLACK & DECKER MFG. CO., Dept. 2005, Towson 4, Md.**

☐ Please arrange a demonstration of your ☐ 1¼"; ☐ ¾" Magnetic Drill Press

☐ Please send me additional information

Name_____ Title_____

Company_____

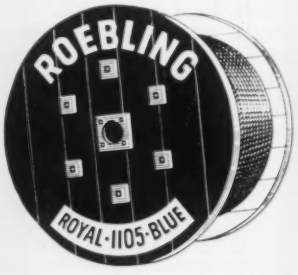
Address_____

City_____ Zone____ State_____

NOTHING **TRANSMITS POWER** AT SUCH LOW COST FOR **SO LONG** AS ROEBLING ROYAL BLUE WIRE ROPE. No means of transmitting power can be compared—on a cost basis—with Royal Blue, the strongest wire rope you've ever used. Meeting industry's stringent service demands is a function fulfilled by Royal Blue in many ways: unimpaired flexibility, great resistance to shock, abrasion and corrosion . . . a plurality of qualities that make for singularly long service life. For further details on "length through strength," communicate with Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

**ROEBLING**

*Branch Offices in Principal Cities*
*Subsidiary of The Colorado Fuel and Iron Corporation*



DESIGN
FOR WIRE ROPE
Its ready adaptability is evident wherever power is transmitted. It conforms to unique design requirements. Use wire rope to transmit power.

# NEW...YET BILLION-PROVED... VALFORGINGS TO IMPROVE PARTS STRENGTH, CUT COSTS

Here is a full-size cross-section of a VALFORGING... an extruded steel forging made by the Valve Division. See how the grain flow lines are continuous and symmetrical with the outside contour. This means added strength and higher impact resistance in any large-head, small-shaft part.

VALFORGINGS come to you precision-forged from any grade of steel you specify, and with practically the finished dimensions of the part. High-cost machining and scrap generation are greatly reduced. The flawless structure of a VALFORGING assures dependability of the finished part and eliminates manufacturing scrap losses resulting from the uncovering of internal defects.

You can confidently switch to VALFORGINGS ...more than one billion have already been produced by the Valve Division as engine valves for the cost-alert automotive industry.

To know *all* about VALFORGINGS, tell us when a sales engineer from the Valve Division may call on you.

**Valve Division** ***Thompson Products, Inc.***

DEPT. ST-558 • 1455 EAST 185th STREET • CLEVELAND 10, OHIO

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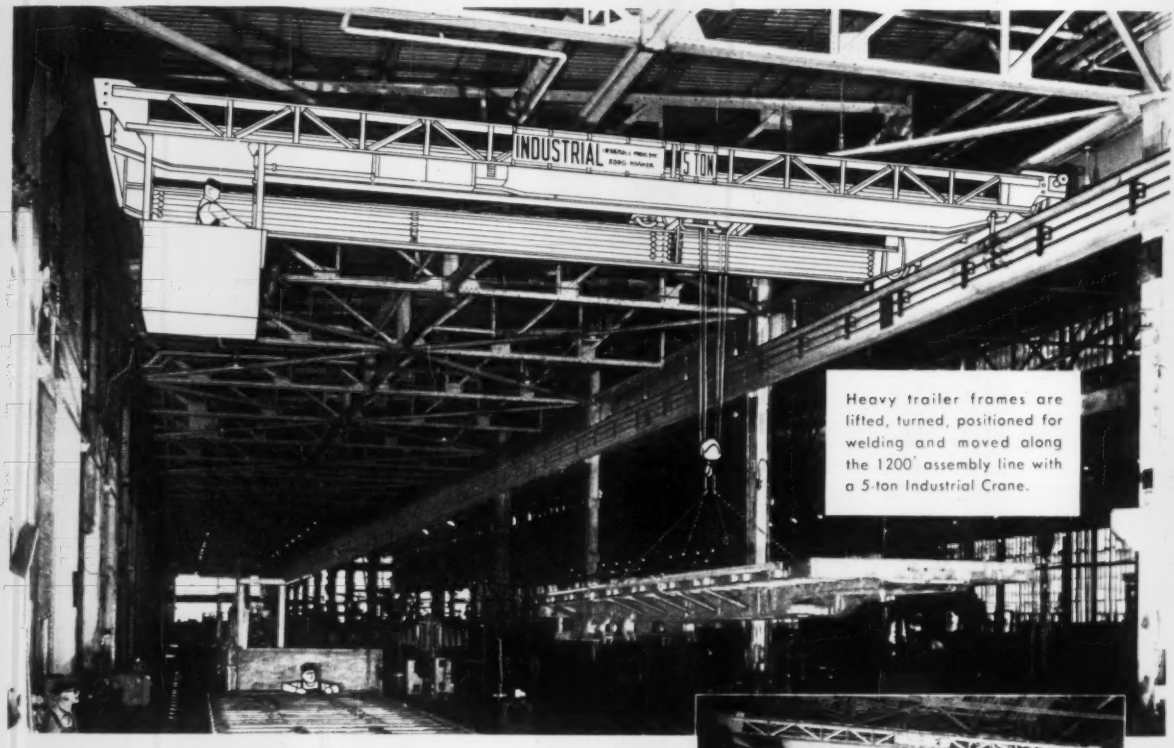
# 7 more Industrial Cranes speed production here . . .




Heavy trailer frames are lifted, turned, positioned for welding and moved along the 1200' assembly line with a 5-ton Industrial Crane.

## Another manufacturer of highway trailers chooses Industrial!

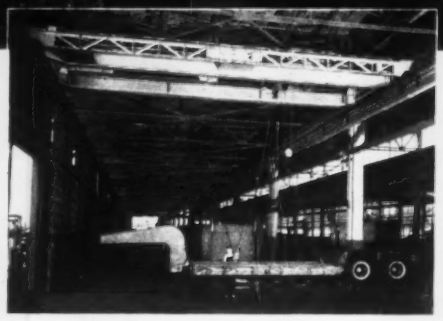
A leading manufacturer of truck trailers uses *seven* 5-ton **INDUSTRIAL** top-running, double-girder, motor-driven cranes in its midwest plant. Two assembly bays, each 1200 feet long are served by one cab-controlled and four floor-controlled **INDUSTRIAL** cranes, moving materials and heavy frames along the assembly lines. Two other floor-controlled **INDUSTRIAL** cranes handle materials in the machine shop.

Constant, regular use in rugged service such as this proves to **INDUSTRIAL** users that *Industrial Cranes are best for the long run.*

● Industrial builds a complete line of cranes for every need. Write for catalogs.

Agents in all principal industrial cities.

Find Your Nearest Dealer in the Yellow Pages

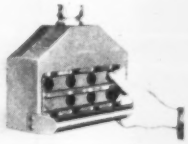


**Floor-controlled assembly crane**

Two floor-controlled Industrial 5-ton cranes move these heavy duty goose-neck trailers along a 1200-foot assembly line. The frames weighing 7000 lbs. and more are placed with precision and speed.

**One hand control**

Industrial's exclusive control box design makes one-hand control easy.



Industrial CRANES

INGERSOLL PRODUCTS

I B-W BORG-WARNER

TR 558 C

## Borg-Warner® INDUSTRIAL CRANES

1550 S. PAULINA STREET, CHICAGO 8, ILLINOIS

Export Sales: Borg-Warner International, 36 South Wabash Ave., Chicago 3, Illinois

# Why SHOULDN'T I be interested in business life insurance?

**"My family's future security depends upon the future of my husband's business."**

A death can shake the very foundation of any business and cause serious financial problems to the families which rely on it. That's why business life insurance is important to every woman, whether her husband is an owner, partner, stockholder or key executive. The future of the firm often depends on business life insurance.

Ætna Life's Business Planning Service can help your attorneys for efficient transfer of your business estate and increase its dollar effectiveness. Thoroughly trained Ætna Life representatives in 91 agencies from coast to coast are ready to offer you this unequaled service in planning your business life insurance.

**ÆTNA BUSINESS LIFE INSURANCE PLANS ARE SPECIALLY DESIGNED . . .**

- To preserve **PARTNERSHIP** value when death comes to any partner.
- To preserve **SOLE PROPRIETORSHIPS** for heirs or selected employees.
- To preserve ownership values when death comes to any stockholder in a **CLOSE CORPORATION.**
- To indemnify any firm for the death of a **KEY MAN.**

*Add Life to your Business with Ætna Business Life Insurance*

**ÆTNA LIFE**
**INSURANCE COMPANY**

*Affiliates:*
ÆTNA CASUALTY AND SURETY COMPANY
STANDARD FIRE INSURANCE COMPANY
Hartford, Conn.

**Ætna Life Insurance Company**
**Hartford 15, Connecticut**

Gentlemen:

Please send me a copy of your new business life insurance booklet "Will This Man Take Your Business With Him When He Dies?"

Name_____

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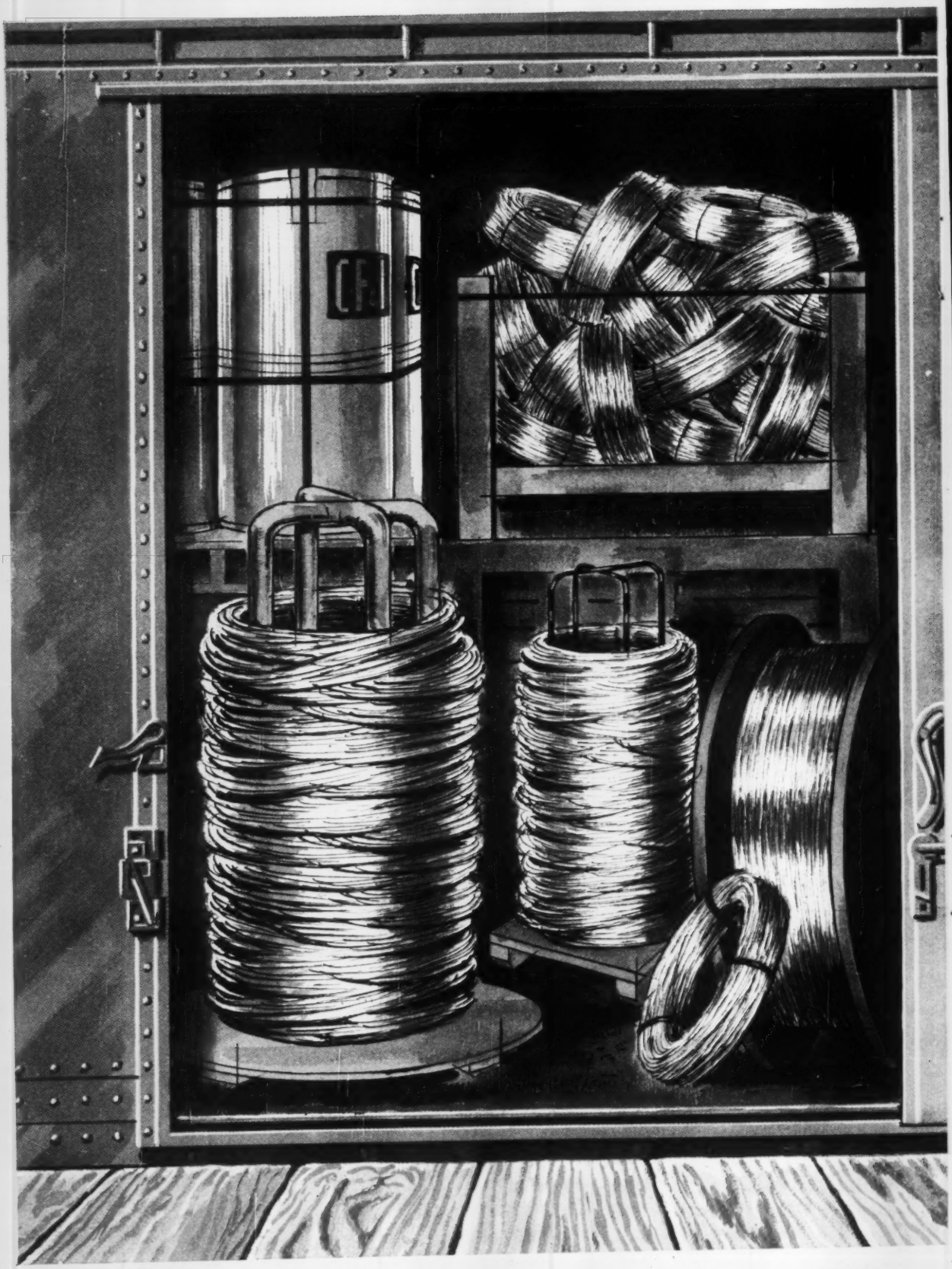


# ASSORTED STEEL WIRE in ONE carload... from ONE source

From Armor Wire to Zig-Zag Wire, CF&I makes steel wire to meet thousands of specifications—packages it to meet any requirement—sells it by the coil or the carload.

You can simplify your purchasing by making CF&I your *source of supply*. Whether you need one coil of just one type of wire or a mixed carload of "assorted" wires, our newly enlarged and modernized wire mills and strategically located warehouses can get it to you—fast.

We supply high or low carbon steel wire—round, flat or shaped—in a wide variety of sizes, tempers, grades and finishes — in steel-strapped or paper-wrapped coils; on spools, reels, "spiders" (holding up to a 4000-lb. continuous length of wire) or in fibre drums. Let us know your requirements.

## CF&I-WICKWIRE WIRE

**THE COLORADO FUEL AND IRON CORPORATION**

**THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln • Oakland • Oklahoma City • Phoenix • Pueblo • Salt Lake City • Wichita
**PACIFIC COAST DIVISION**—Los Angeles • Portland • San Francisco • San Leandro • Seattle • Spokane
**WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
**CF&I OFFICES IN CANADA:** Montreal • Toronto • **CANADIAN REPRESENTATIVES AT:** Calgary • Edmonton • Vancouver • Winnipeg

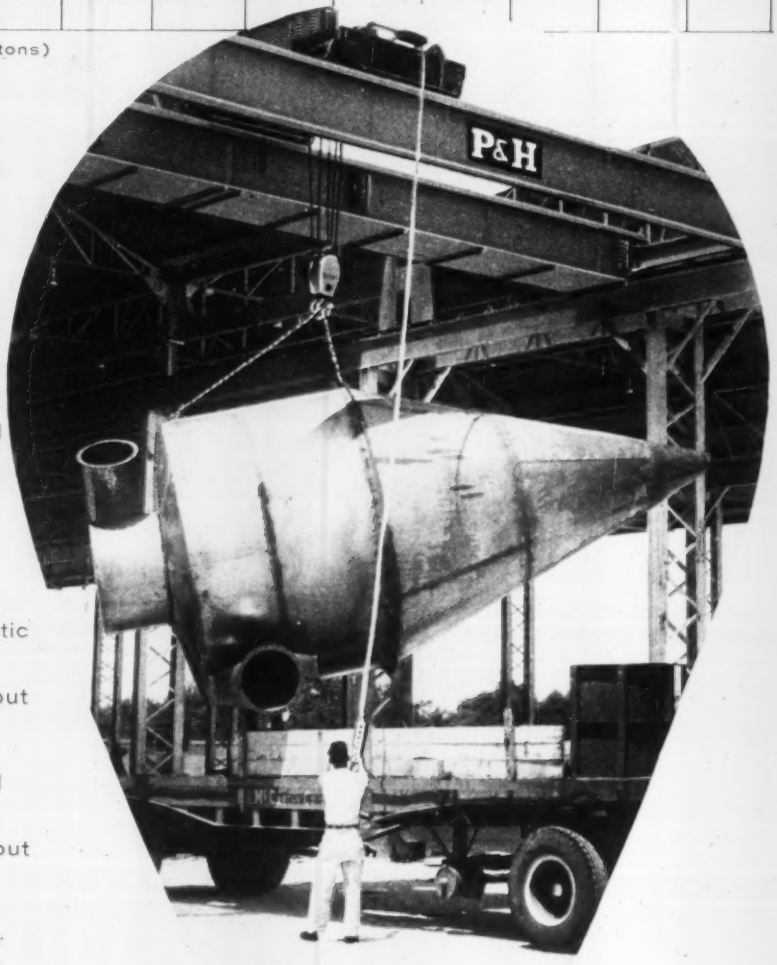
5757

# COMPARE SPECS

*and you'll see why your best crane buy is*

# P&H TRAV-LIFT

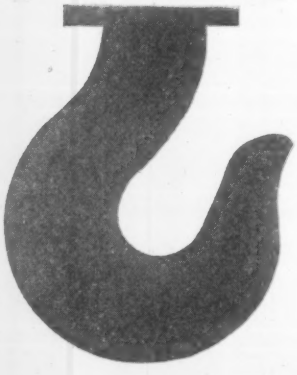
(capacity 1 to 20 tons)




## *COMPARE FIRST... THEN SPECIFY*

- P&H one-source responsibility for **all** parts and service
- Electrical equipment designed specifically for crane service
- DC rectifier brakes that cut maintenance in half
- Push button floor or cab operated... or both
- Variable speed 5-step magnetic control
- Anti-friction bearings throughout
- All-welded steel construction
- Bridge engineered for vertical strength and lateral stability
- Heat treated gearing throughout
- Forged steel wheels

Only P&H Trav-Lift offers all these quality features in the 1 to 20 ton crane class. Yet because it is standard-built from mass produced parts, you can own a Trav-Lift for far less money than you think! Find out more — write for Trav-Lift Bulletin C-51 to Dept. 117E, Harnischfeger Corp., Milwaukee 46, Wisconsin.



**HARNISCHFEGER**

P&H ... quality and service for 74 years

# WHO FORGES THE TOUGH ONES?
## and dynamic balances them, too?

To further National Forge's reputation for producing precise forgings, we've installed one of the largest, most accurate dynamic balancing machines in use. Our American-Trebel has a 33,000-pound, 60-foot capacity.

Pictured on the machine is a 42 ft. propeller shaft that has been forged, machined, and hollow bored—all operations done in our National Forge plant. NFO specialists are shown balancing this 15,500 lb. shaft to within 730 ounce-inches in two planes.

If you want one responsible source to produce and control the quality of your forgings . . . from melting and forging the steel through machining and dynamic balancing . . . call National Forge. Let us quote on your next job—and *prove* "who forges and dynamic balances the tough ones . . . best!"

NATIONAL FORGE & ORDNANCE COMPANY
IRVINE, WARREN COUNTY, PA.

For information on the "tough" ones and the machinery that makes them best, write for Bulletin NFO3.

# Burroughs' Unique Tests and Johnson Wire Build Quality, Long Life in Business Machines

## Detroit Plant Develops Own Devices For 100% Tests of Music Wire Springs

Burroughs Corporation demands music spring wire as thin as a spider web's strand but with a minimum tensile strength of 439,000 pounds per square inch.

Then—to make sure it gets what it orders—the Detroit business machine manufacturer does 100 percent testing of all wire coming into its plants. Burroughs goes further than standard test equipment would permit and has developed its own special testing devices.

Burroughs' insistence on enforcing specifications is the kind of quality challenge on which Johnson Steel & Wire Company thrives. A customer's emphasis on quality wire complements Johnson's own skill and care given to producing the best in specialty fine wires.

**Precision springs,** made from Johnson Steel & Wire Company's music spring wire, get 100 percent testing on unique testing machines like this. Designed and built by Burroughs, this machine verifies a spring's load-carrying capacity at various extensions. If any modification is needed, correction can be made while spring is still on test device.

**Johnson Steel & Wire has become Burroughs' major music spring wire supplier because Johnson's wire passes 100 percent inspection with flying colors.**

At Burroughs, where a monthly production of 3½ million precision springs of music wire is not unusual, close attention must be given to everything affecting performance of the finished spring. Failure of even the simplest spring could disable an adding machine, cash register, calculator or any of the dozens of different business machines Burroughs makes.

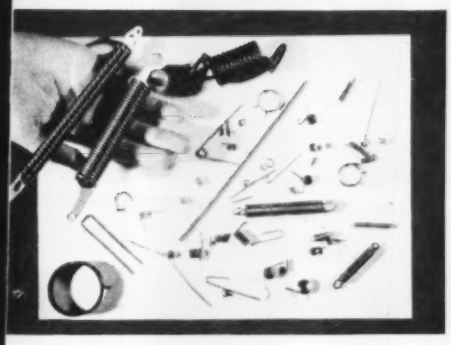
For its new machines, as well as service parts for older models, Burroughs makes 1,300 different kinds of springs. Music wire required for them ranges from .005-inches in diameter (with minimum tensile strength of 426,000 psi) to the largest diameter used—.106 inches in diameter, (with a minimum tensile of 268,000 psi).

Here's what Burroughs wants from music spring wire, in addition to tensile strength:

**The coating,** in the case of tin-coated music spring wire, must be uniform and adherent to eliminate peeling, cracking or flaking during coiling.

- **High physical qualities,** uniform cast and smooth, lustrous surfaces are another must so that uniform springs, within dimensions and capable of carrying assigned loads, can be produced.
- **Accuracy of dimensions** greatly affects spring coiling and spring performance. Burroughs' tolerance specifications are met consistently by Johnson's wire.
- **Straightness requirements** for pre-straightened wire call for a three-foot length of wire cut from a

(Advertisement)



**Here's some of the approximately 1,300** different kinds of springs which Burroughs Corporation manufactures from Johnson Steel's music spring wire.

coil to be straight within 4 inches for .013-inch diameter wire and straight within 3 inches for wire .014-inch diameter and larger.

• **Coilability** is assured in the music spring wire Burroughs buys. Burroughs specifies that wire (.105 inch in diameter and smaller) must meet this test:

Wire is wound in a tightly closed spring to a coil length of 5 inches on an arbor 3 to 3½ times the diameter of the wire. When this spring is stretched so that it sets to 3 times its original length, the coils must show a uniform pitch with no splits or fractures in the wire.

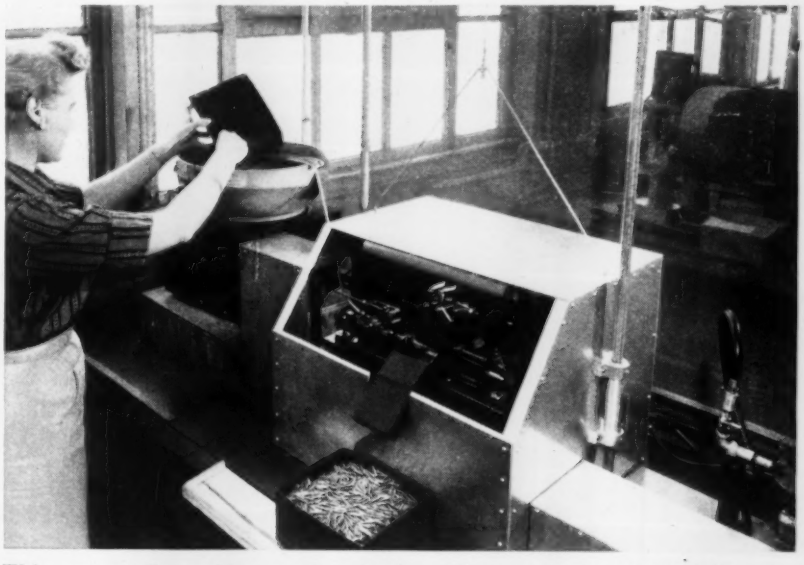
Testing completes the cycle which calls for highly skilled technicians coiling the best music spring wire available on the most modern equipment.

Testing machines, designed and built by Burroughs and used in addition to the standard machines, include the test fixture pictured here. This machine tests load-carrying capacity of springs. If any corrections are needed, they can be made while the spring is still on the test device.

Burroughs' careful attention to specs, its quality control and its testing procedure—plus its confidence in Johnson's music spring wire—are proof that Johnson can meet the toughest music wire demands.

Putting Johnson's music spring wire on your production lines starts benefiting you immediately. A corps of skilled wire engineers is as close as your telephone. Get in touch today with any of the district sales offices listed at right.

**Several hundred music wire springs** have been installed in this portable Burroughs adding machine. Every spring is critical, says Burroughs, because even the smallest spring failure could disable the machine.



**This automatic spring eye-forming machine** was designed and built by Burroughs personnel. An operator is shown filling the hopper with coiled springs which will be given an eye at each end on this device.


**Johnson Steel & Wire Company, Inc.**

Worcester 1, Massachusetts

*a subsidiary of* **Pittsburgh Steel Company**

Grant Building • Pittsburgh 30, Pa.

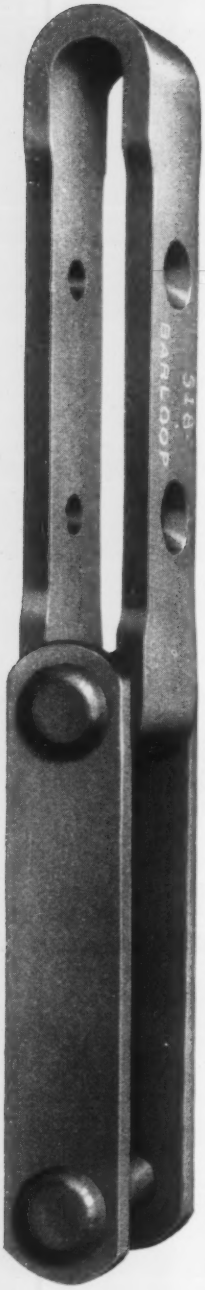
**District Sales Offices**

| | | | | |
|---|---|---|---|---|
| Atlanta | Cleveland | Dayton | Los Angeles | Pittsburgh |
| Chicago | Dallas | Detroit | New York | Tulsa |
| | | Houston | Philadelphia | Warren, Ohio |

*(Advertisement)*

• less wear on runways...

• longer life for chain




# JEFFREY BARLOOP CHAIN

*Interchangeable with your flat-and-round chain. It is inexpensive and long-lived.*

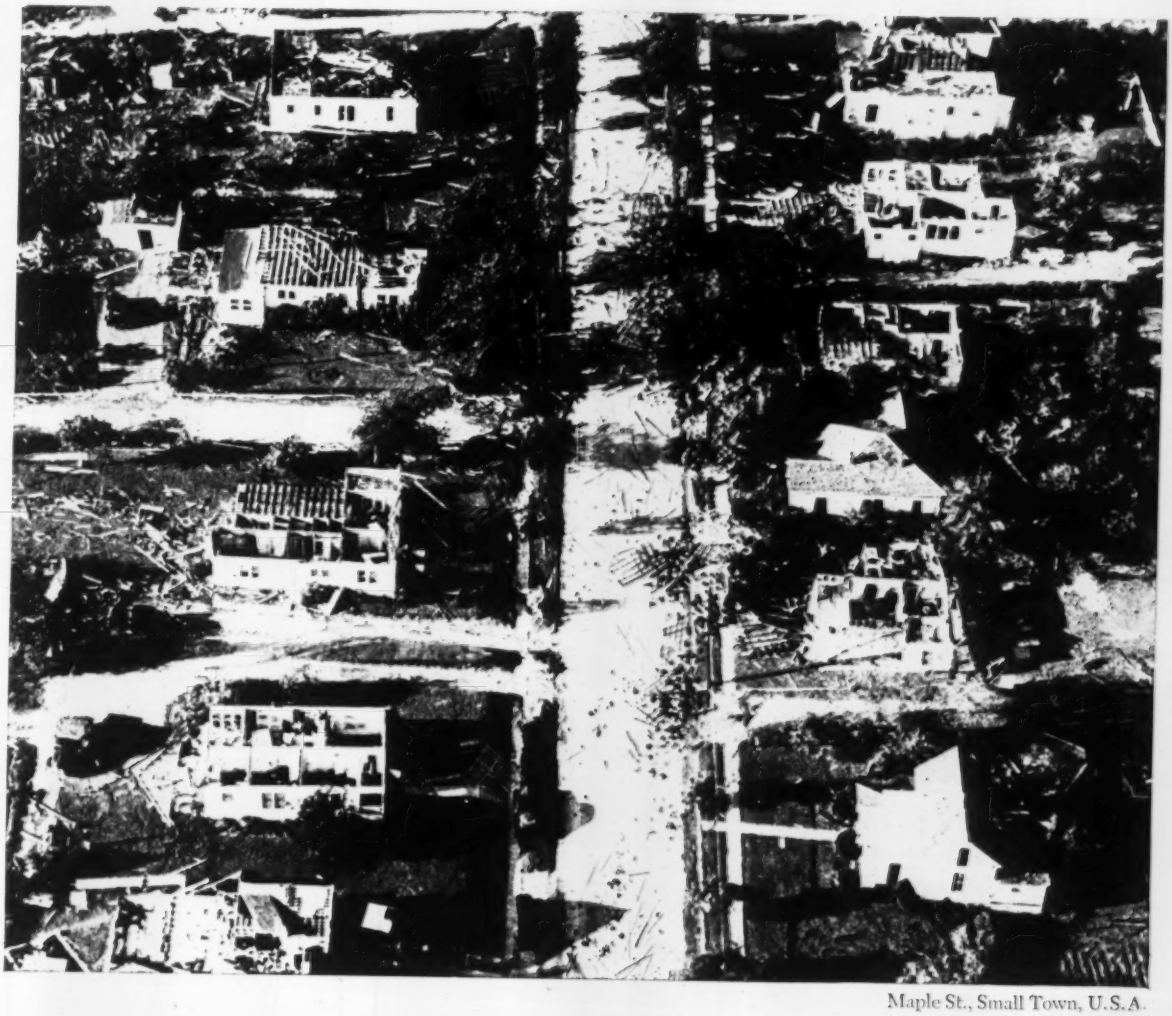
Jeffrey barloop chain presents low bearing pressures to surfaces on which it slides. Serves well in handling of non-abrasive or semi-abrasive materials because the open strap construction makes it self-cleaning. No trapping of corrosive, abrasive materials being handled by the conveyor to accelerate pin wear.

Installing and modification of conveyors are simplified with Jeffrey barloop chain. It can easily be taken apart and put together at any point. There's less downtime for conveyor upkeep.

Ask your nearby Jeffrey distributor about Jeffrey barloop chain for general elevator and conveyor service. He can advise on and take care of most of your chain requirements. The Jeffrey Manufacturing Company, 889 North Fourth Street, Columbus 16, Ohio.

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT... TRANSMISSION MACHINERY... CONTRACT MANUFACTURING



Maple St., Small Town, U.S.A.

# A TOWN WHERE "NOTHING EVER HAPPENS"...

A home town—like your town. A place where people said "it couldn't happen to us."

But it *did*. Like a whip, a great tornado lashed down Maple Street, splintering houses, leaving people hurt—homeless—panic-stricken.

A desperate call went out for the Red Cross and quickly, automatically, the team went into action.

Red Cross nurses slipped into uniform . . . volunteers set up first aid stations . . . canteens fed the hungry. Later, Red Cross money and work helped rebuild the town.

*Last year was one of the worst disaster years of this century, and the year before, 1956, was almost as bad.* Every month and in every state, the Red Cross strained to the limit as hurricanes, floods, tornadoes, forest fires swept across the country.

Red Cross receives no government funds—depends entirely upon *you* for support. Give as much as you can. Your dollars may go to your own town when it needs them most.

**Join and Serve**

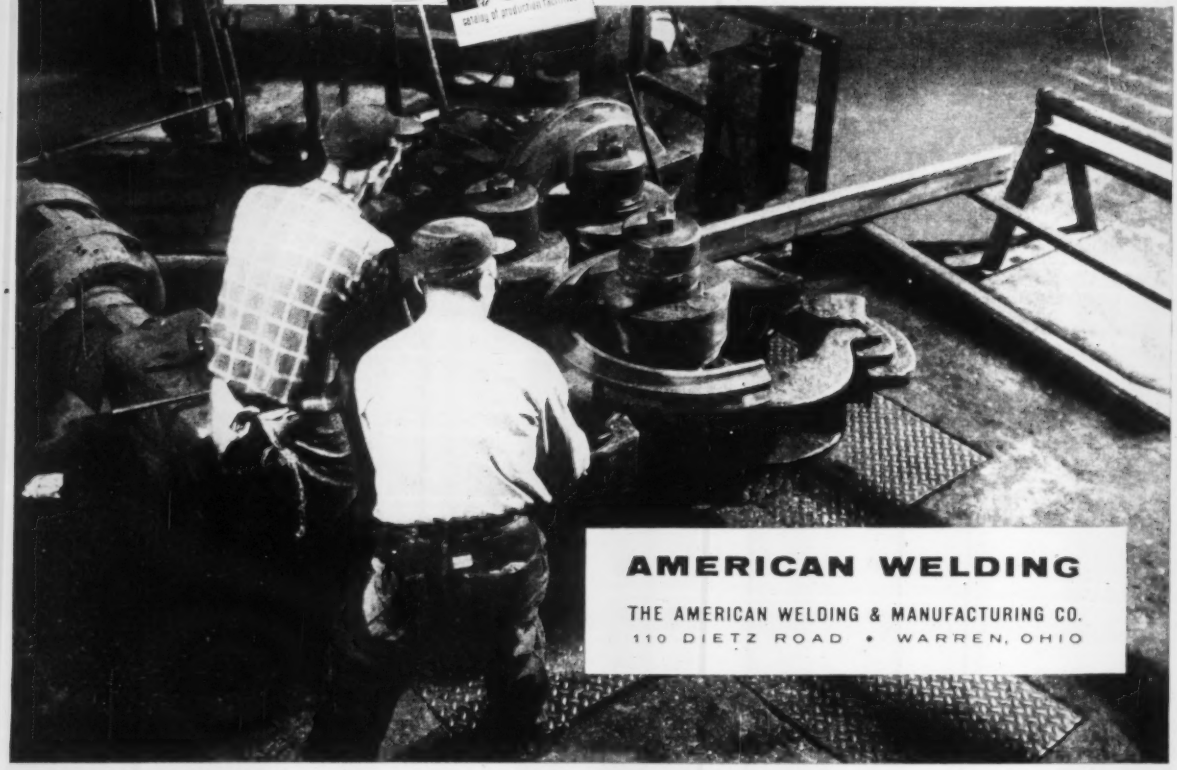
SPACE CONTRIBUTED BY STEEL

## Extruded Shape Formed and Flash Butt-Welded . . . the Low-Cost Way to Make this 268 lb. Stainless Steel Ring

By using extruded or mill-rolled shapes and flash butt-welding, American Welding can frequently help customers slash production costs of their circular products over other methods of manufacture. Savings in expensive metals are substantial, plus sizable reduction in machining time. And where some of the more difficult metals to weld — such as titanium, aluminum, zirconium, stainless and heat-resistant alloys — are required, American Welding has the special knowledge and equipment to do those difficult jobs to your specifications.

The use of flash butt-welded rings, bands, and assemblies has saved millions of dollars for jet engine manufacturers . . . why not investigate what economies it can mean to you. If it's circular and of metal — call American Welding first!

**NEW PRODUCTS CATALOG AVAILABLE.** Write today for 20-page catalog illustrating the many types of circular products American Welding can form, weld and machine for you.



**AMERICAN WELDING**

THE AMERICAN WELDING & MANUFACTURING CO.
110 DIETZ ROAD • WARREN, OHIO

STEEL

May 5, 1958

# Metalworking Outlook

## Pressure on Depreciation Mounts

Pressure is mounting in Congress for temporary relief from our strait-jacket depreciation laws. But it's still nip and tuck whether this Congress will accept an antirecession measure such as STEEL proposes (Apr. 28, Page 55). Sen. Homer E. Capehart (R., Ind.) has just introduced a bill. From Jan. 1, 1958, to Dec. 31, 1959, it would cut in half Bulletin F estimates of useful lives of property where the period doesn't exceed 15 years. If greater than 15, the measure would cut in half the first 15 years and reduce the remaining life by two-thirds. It would apply in cases where the present useful life is at least six years. The proposal would have nearly the same effect as STEEL's suggestion for a temporary return to five-year amortization. Rep. Richard Simpson (R., Pa.), member of the tax-writing Ways & Means Committee, is expected to introduce the Capehart measure in the House.

## What the UAW Wants

Here are demands the United Auto Workers made before its tactical switch last week (see Page 52): 1. Across-the-board wage hike of more than 10 cents an hour. 2. Additional special wage increases in the form of job class differentials costing an estimated 12 cents an hour. 3. Additional holiday, vacation, and overtime payments estimated at 9 cents. 4. A 15-cent boost in pension benefits, including a cost-of-living adjustment of pensions. 5. Added insurance benefits worth 2 cents. 6. Indirect wage costs (overtime and shift differentials) resulting from wage demands to cost more than 3 cents. 7. Some 248 changes in the working agreement. Total cost: 73 cents an hour, not counting 9719 demands from locals for items like paved parking lots that add up to more than 24 cents an hour.

## The Status of Autodom's SUB

In making demands to automakers, the UAW reveals the status of SUB funds and points out that a substantial amount of payments have come from accumulated interest. It offers that as proof that SUB payments can be extended. Contributions are from June, 1955, to March, 1958. (All dollar figures in millions.)

| | Total Contributions | Total Payments | % Paid From Interest | Total Assets |
|---|---|---|---|---|
| GM | $97.9 | $7.0 | 61.1 | $95.1 |
| Ford | 40.0 | 4.5 | 39.5 | 37.3 |
| Chrysler | 27.0 | 6.0 | 12.1 | 21.8 |

## Jobless Pay Reserves High

The dollar value of the total reserves of the 51 jobless pay systems in the U. S. grew from $8.3 billion in 1953 to $8.7 billion on Jan. 1, 1958. The nationwide reserve ratio at the end of 1952 was 6.3 times the 1948-1952 average annual cost rate. In December, 1957, reserves were only 5.4 times

the average annual costs of 1953-57, reports National Industrial Conference Board.

## New York and SUB

A new unemployment insurance benefit law just enacted in New York poses SUB problems in that state. The measure hikes jobless pay from $36 to $45 and makes the higher benefits retroactive to last July 1. Some 3000 unemployed steelworkers and an undisclosed number in other industries paying SUB must repay part of the SUB they have received.

## Hands Off for U.S. in Steel

Don't look for government intervention in any steel wage-price hassle. Chances are that the industry would not boost prices July 1 if the union canceled 20-cent-an-hour higher wage costs expected for July 1. But the union again and again says it wants the increase. So a price boost is likely this summer.

## AMC Stock Program Unique

American Motors Corp. has a unique employee stock program. Eight hundred of its Detroit salaried employees can have the firm deduct a minimum of $40 each month or each quarter to be invested in any stocks the employee chooses. William C. Roney & Co., New York, is the brokerage firm handling the deal.

## Gas Turbine Tractor

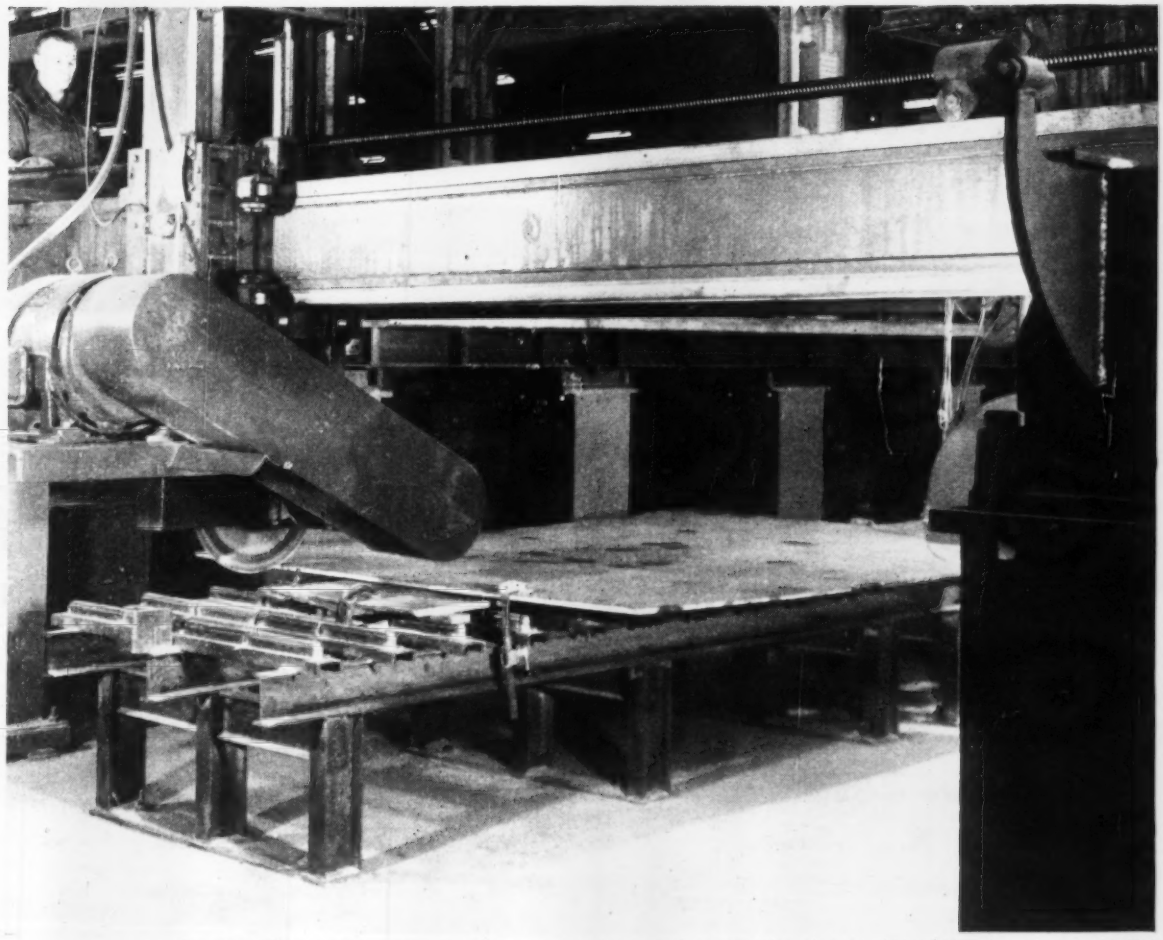
Allis-Chalmers Mfg. Co. has developed an experimental gas turbine crawler tractor. Tests are being made to determine whether it will match or improve upon its diesel counterpart. Design involves the equivalent of a built-in torque converter.

## '59 Metal-Mineral Use To Rise

The consumption of metals and minerals in the U. S. this year will be about 10 per cent below the 1957 total. So predicts Assistant Secretary of Commerce Frederick J. Mueller. Use during the first quarter exceeded the 10 per cent lag behind last year, but Mr. Mueller expects a second-half improvement to balance off the first-quarter drop. He believes that the summer will start a period of increasing metal use. That pickup should continue through next year. Total consumption in 1959 is expected to be near the 1957 totals.

## Straws in the Wind

American industry is in danger of pricing itself out of world markets, members were warned at the National Machine Tool Builders' Association meeting . . . A government committee will study General Electric Co. charges that imports of heavy electrical generating equipment threaten the national security . . . Lower first-quarter earnings will not affect Inland Steel Co.'s major expansion and modernization program this year . . . United States Steel Corp. has ruled out any immediate construction of a large taconite plant in Minnesota . . . Unemployment is now 7.5 per cent of workforce.



This special Ryerson saw assures square, parallel cuts and smooth edges on stainless plate . . . width and length tolerances ± 1/32"

# The plus you get when it's stainless from Ryerson

**WIDEST SELECTION**—No other source comes close to offering a comparable range of stainless types, shapes and sizes—so you can always get exactly what you need.

**UNIQUE SERVICE**—Big-capacity abrasive saw assures the ultimate in cutting accuracy . . . and shearing, hack-sawing and flame-cutting facilities also meet exacting requirements.

**EXPERT TECHNICAL HELP**—Ryerson specialists are always ready to work with you on any problem of stainless selection and fabrication.

No wonder more people buy more stainless from Ryerson than from anybody else.

Skilled operators and perfected techniques enable Ryerson to flame-cut special shapes and heavy plate to an exceptional degree of accuracy.

RYERSON CERTIFIED QUALITY

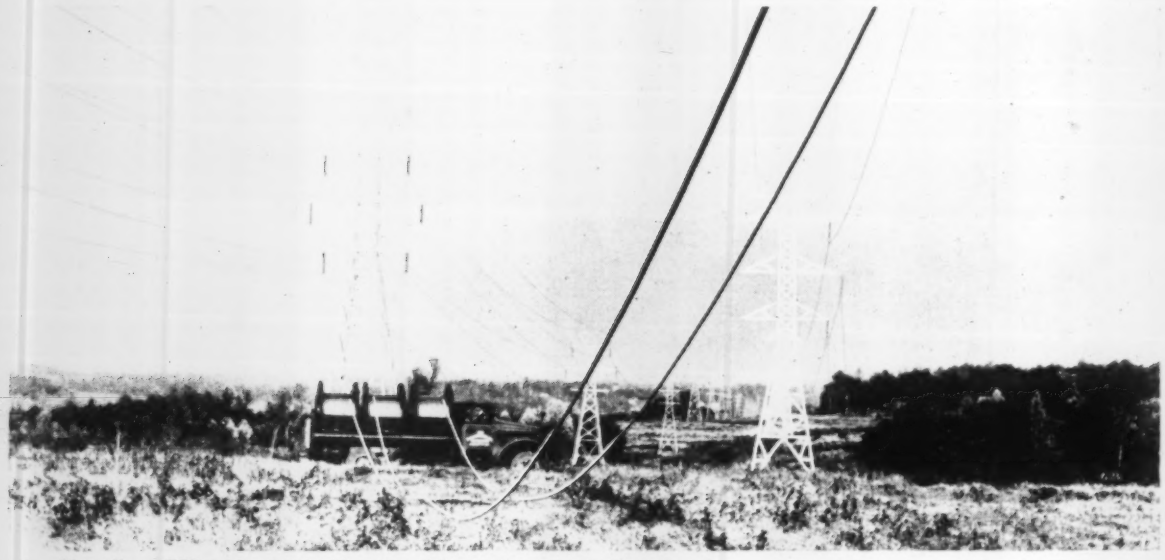
## RYERSON STEEL®

Member of the PLAMET Steel Family

*Principal Products: Carbon, alloy and stainless steel —tubing, bars, structurals, plates, sheets —aluminum, industrial plastics, metalworking machinery, etc.*

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK · BOSTON · WALLINGFORD, CONN. · PHILADELPHIA · CHARLOTTE · CINCINNATI · CLEVELAND DETROIT · PITTSBURGH · BUFFALO · INDIANAPOLIS · CHICAGO · MILWAUKEE · ST. LOUIS · LOS ANGELES · SAN FRANCISCO · SPOKANE · SEATTLE

## The PROOF of DSC STEEL is in its PERFORMANCE ON YOUR JOB



▲ Unreeling ACSR cable, view looking west of King's Mountain, S. C.

ACSR INSTALLATION PHOTOS: COURTESY ANACONDA WIRE AND CABLE COMPANY, HASTINGS-ON-HUDSON, N. Y.

# DSC ACSR* Core Wire and Aluminum Cable join strands to cut power transmission costs

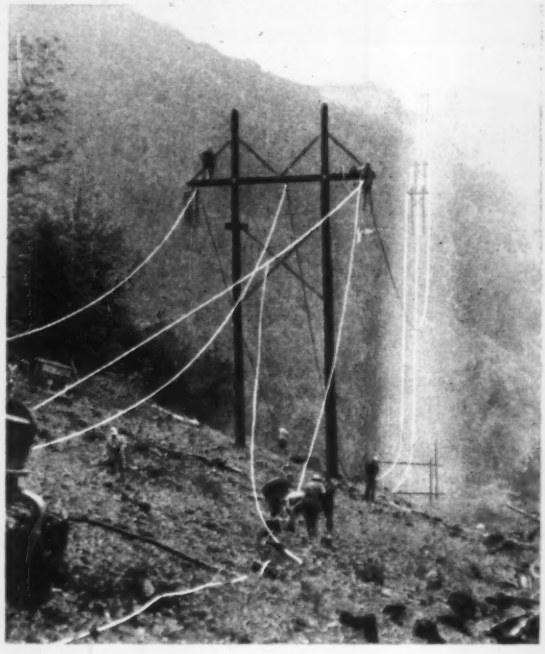
Light weight, high current carrying capacity, are engineering and economic advantages of aluminum cable . . . ideal for high-tension overhead power transmission lines.

ACSR cable's ability to support itself over long spans and to resist the destructive forces of temperature extremes, wind, ice and lightning—depends on ACSR Core Wire . . . a hard drawn, high carbon (0.50 to 0.75%), high tensile (190,000 psi min.), heavily zinc-coated Specialty Wire . . . as produced by our Portsmouth Division in accordance with ASTM B 245-55 for major aluminum cable manufacturers.

* { For the cable fabricator—ACSR means Aluminum Conductors, Steel Reinforced
For the wire producer—ACSR means Aluminum Cable Strand Reinforcement

***For more information on ACSR Core Wire . . . or about other DSC Rod and Wire products . . . or DSC Sheet and Strip steel—please write our G.S.O. or call your nearest DSC Customer "Rep" . . . today?***

▼ Installing ACSR cable, Catskill Mountains, N. Y.



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**DEPRECIATION POLICY**

# Model T In Space Age

AMERICA's industrial plant—its capacity and its efficiency—long has been the envy of the world.

But this country's depreciation policy, under which we attempt to maintain that plant, is among the most obsolete in the world.

Our concept of useful lives for machinery and equipment belongs to yesteryear, before technology grew wings.

Our policy ignores inflation. What we recoup from depreciation is sadly inadequate to replace our equipment.

For contrast, look at what other countries—some industrial powers and some that only want to be—are doing:

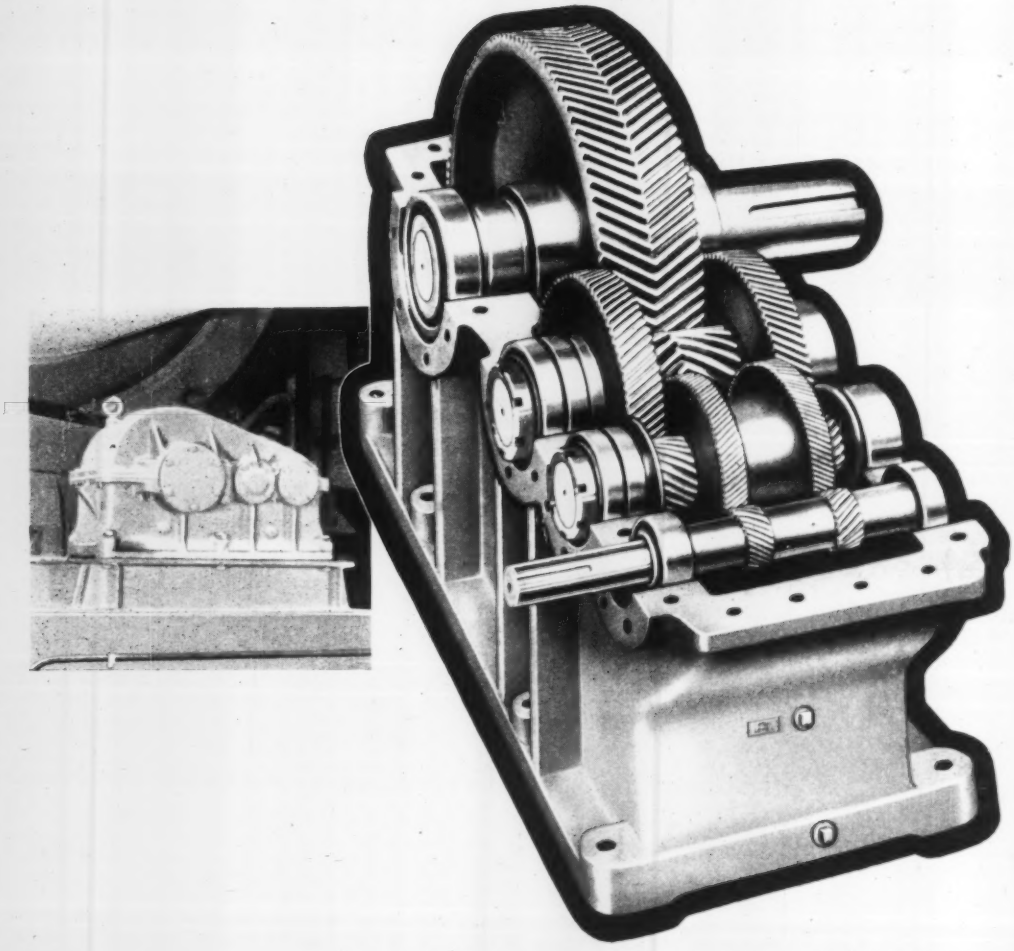
- West Germany—Depreciation is negotiated with each company. The usual result is permission to write off 30 per cent of new investments in each of the first two years. Then the rate drops to 4 per cent so the remaining 40 per cent can be amortized over ten years. This liberal policy has had a lot to do with the spectacular postwar recovery of West German industry.
- India—To encourage new industries and help established ones, this country allows normal depreciation for plant and equipment ranging from 7 to 25 per cent a year. In 1955, she introduced an outright development rebate of 25 per cent on the cost of all new machinery and equipment installed after Mar. 31, 1954. The concession is in addition to normal depreciation and makes it possible for the investor to recover up to 125 per cent of his original cost of facilities.
- Brazil—Revaluation is permitted. Machinery may be amortized at 10 per cent per year.
- France—Has inflation coefficient to revalue assets and sanctions depreciation on a replacement basis.
- Japan—Passed revaluation laws for depreciable assets in 1950, 1951, and 1953. A government price index is used. Future depreciation is based on stepped-up value.
- Argentina—Permits 50 per cent of cost to be written off the first year.
- Australia—Lets industry fix rates if it can justify them.
- Canada—Gives machine tools a depreciable life of five years.
- Sweden, Great Britain, Mexico, Norway, Italy, and other countries have legislated depreciation reforms.

Why haven't we?

Is all the inertia the fault of politicians? Or is industry waging an ineffective campaign?

Walter J. Campbell

EDITOR



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INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS

# Metalworking's First Quarter Earnings Plunge . . .

(Net Profit)

| Selected Manufacturers | First Quarter 1958 | 1957 |
|---|---|---|
| Allis-Chalmers Mfg. Co. | $ 2,307,199 | $ 5,100,158 |
| Aluminum Co. of America | 11,458,810 | 18,594,086 |
| American Brake Shoe Co. | 1,044,933 | 2,496,877 |
| American Machine & Foundry Co. | 2,678,000 | 3,474,000 |
| Babcock & Wilcox Co. | 2,000,000 | 3,774,000 |
| Bliss & Laughlin Inc. | 227,265 | 666,422 |
| Borg-Warner Corp. | 5,016,000 | 9,022,000 |
| Burroughs Corp. | 1,100,414 | 3,223,218 |
| Chrysler Corp. | (a)15,139,802 | 46,545,521 |
| Continental Can Co. Inc. | 7,092,000 | 7,293,000 |
| Douglas Aircraft Co. Inc. | 8,595,949 | 8,772,755 |
| Eaco Products Co. | 734,308 | 890,290 |
| Ford Motor Co. | 22,700,000 | 100,500,000 |
| Four Wheel Drive Auto Co. | 181,083 | 113,968 |
| General Electric Co. | 49,184,000 | 64,006,000 |
| General Motors Corp. | 185,000,000 | 261,000,000 |
| General Steel Castings Corp. | 760,871 | 738,748 |
| IBM Corp. | 23,396,118 | 18,745,607 |
| Johns-Manville Corp. | 1,900,000 | 2,953,554 |
| Kennecott Copper Corp. | 11,651,594 | 27,785,579 |
| Mack Trucks Inc. | 1,138,509 | 3,016,470 |
| National Cash Register Co. | 3,661,816 | 3,836,928 |
| National Lead Co. | 8,952,326 | 14,772,815 |
| Otis Elevator Co. | 3,322,214 | 2,992,295 |
| Pittsburgh Screw & Bolt Corp. | 84,542 | 610,619 |
| Polaroid Corp. | 1,181,000 | 840,000 |
| Reynolds Metals Co. | 9,910,345 | 9,880,571 |
| Rockwell Standard Corp. | 2,578,211 | 4,505,566 |
| Square D Co. | 1,435,858 | 2,523,152 |
| Standard Forgings Corp. | 17,401 | 379,774 |
| St. Joseph Lead Co. | 2,424,296 | 2,757,042 |
| Sundstrand Machine Tool Co. | 786,000 | 1,045,000 |
| Sylvania Electric Products Inc. | 1,167,818 | 3,069,944 |
| Texas Instruments Inc. | 1,109,000 | 790,000 |
| Thompson Products Inc. | 1,926,668 | 4,050,615 |
| Timken Roller Bearing Co. | 3,249,168 | 6,399,672 |
| Union Carbide Corp. | 22,832,616 | 35,454,638 |
| Westinghouse Electric Corp. | 12,903,000 | 14,198,000 |

(a) Net loss.

# Steelmakers Fare Worse

(Net Profit)

| Selected Steel Companies | First Quarter 1958 | 1957 |
|---|---|---|
| Alan Wood Steel Co. | $32,967 | $899,000 |
| Allegheny Ludlum Steel Corp. | 725,900 | 4,790,665 |
| Armco Steel Corp. | 9,171,693 | 15,487,752 |
| Bethlehem Steel Corp. | 24,819,490 | 53,427,655 |
| Carpenter Steel Co. | 604,838 | 2,065,495 |
| Colorado Fuel & Iron Corp. | (a)1,390,096 | 4,552,392 |
| Continental Steel Corp. | 580,839 | 662,262 |
| Copperweld Steel Co. | (a)112,505 | 988,994 |
| Crucible Steel Co. of America | 172,395 | 3,372,606 |
| Detroit Steel Corp. | (a)303,678 | 1,008,166 |
| Eastern Stainless Steel Corp. | 249,001 | 661,421 |
| Granite City Steel Co. | 2,055,182 | 3,421,451 |
| Inland Steel Co. | 7,961,147 | 14,613,704 |
| Jones & Laughlin Steel Corp. | 1,657,000 | 12,823,000 |
| Kaiser Steel Corp. | 1,734,426 | 7,784,118 |
| Lone Star Steel Co. | 482,638 | 3,288,951 |
| Lukens Steel Co. | 1,470,230 | 3,365,498 |
| National Steel Corp. | 3,801,426 | 13,501,506 |
| McLouth Steel Corp. | 454,037 | 3,431,813 |
| Republic Steel Corp. | 8,583,506 | 28,052,826 |
| Sharon Steel Corp. | (a)283,213 | 1,592,644 |
| United States Steel Corp. | 62,426,679 | 115,478,109 |
| Wheeling Steel Corp. | 505,000 | 4,559,000 |
| Youngstown Sheet & Tube Co. | 3,576,100 | 10,607,267 |

(a) Net loss.

## So Companies Trim Costs

Inefficient facilities are retired.
Operations are centralized.
Salaried employees take pay cuts.
Production workers are laid off.
High efficiency equipment is installed.
Union demands meet stiff resistance.
Expense accounts are watched more closely.
Price shopping becomes widespread.
Overtime is reduced or eliminated.

## And Push Marketing

Special promotions are staged.
Sales territories are widened.
Sales calls are more frequent.
New distribution channels are sought.
Below-par salesmen are eliminated.
Credit terms are liberalized.
Product design is improved.
New product development is accelerated.
Replacement sales get more emphasis.

# Profit Outlook Still Dim

METALWORKING'S profits plunged in the first quarter, prompting management to accelerate cost reduction programs and re-examine marketing structures and practices. Goal: Improve break-even points.

Twenty of 24 steelmakers (see above) made a profit in the first quarter despite an industry operating rate that averaged only 54 per cent of capacity. Detroit Steel Corp., which operated at 37 per cent of capacity, had a $303,678 net loss. M. J. Zivian, president, asserts that a difference of 6 or 7 percentage points would have kept the firm in the black. "A rate of 60 to 65 per cent will make a good profit," he adds.

Inland Steel Co. averaged 69 per cent (vs. 104.1 a year ago). Profits dropped 45.5 per cent. Republic Steel Corp.'s rate was about 46 per

cent, vs. 93.3 per cent in '57's first period. Its earnings dropped nearly 70 per cent. Allegheny Ludlum Steel Corp. had net income of $725,900 (vs. $4.8 million a year ago) at an operating rate above 50 per cent. It's now "pushing a vigorous cost reduction program."

**Casualty List**—Among industries where profits dropped most: Steelmaking, automotive, machine tools, nonferrous metals, steel fabricators, heavy machinery. Some groups slipped less: Electrical equipment, instruments, aircraft. Only a few smaller industries showed gains.

**Which Way Now?**—Some plants have trimmed inventories to the point where an uptrend in business would be immediately translated into orders for materials and components. But many still have a lot of reducing to do (See Page 125).

**Up?**—Machine tool orders have improved (builders wonder if it's temporary); and some companies in other industries see signs of improvement:

Ralph J. Cordiner, chairman, General Electric Co.: "Sales billed in March increased sharply, but it's too early to know if a trend of this magnitude can be sustained."

Alva W. Phelps, chairman, Oliver Corp.: "March sales ran about 30 per cent ahead of those in the year-ago month." George M. Humphrey, chairman, National Steel Corp.: "The economy is coasting along on what seems to be the bottom; the next move should be upward."

**Down?**—While the second period may bring improvement over the first, it won't approach year-earlier heights. For some firms, it will bring a deeper slide. Roy C. Ingersoll, chairman, Borg-Warner Corp., says: "Considerably less earnings the rest of the year are in prospect."

**Sidewise?**—Some executives share the view of A. King McCord, president, Westinghouse Air Brake Co., who expects sales and earnings to fluctuate around current levels for the rest of the year.

Profit per sales dollar could be better in the second period—barring extreme wage increases or an epidemic of price cutting. Cost reduction programs started in late '57 and early '58 are beginning to show results. And by now, many companies have cut back operating costs to more closely reflect sales volumes.

## UAW's Pitch: A Stall or a Face Saver?

| Mr. Reuther Asks . . . | Companies Offer . . . |
|---|---|
| Extend contract three months and: | Extend contract two years and; |
| 1. Grant more jobless protection with liberalized Supplemental Unemployment Benefits (SUB). | 1. Continue cost of living and annual improvement factor. |
| 2. Cut car prices. | 2. Establish trust funds in states where SUB is invalid. |
| 3. Seek a cut in excise taxes on autos through joint union-industry efforts. | 3. Help UAW rebate strike fund dues. |

# Compromise: One Year Pact?

AUTOMAKERS are pretty sure the UAW will settle before contracts expire. General Motors Corp. has served notice that it intends to terminate its contract on May 29. Ford Motor Co. and Chrysler Corp. are following GM's lead.

Detroit thinks an obvious settlement point is a one-year contract with automatic wage and cost of living increases, longer SUB pay periods, and maybe a trust fund deal for states that won't accept SUB.

It looks like talk of price cuts will wither. The union, having planted its profit sharing seed, now can sit by and let it germinate until the economic climate is more favorable.

Labor circles believe that new demands mean the union is already backing away from its stand. Walter Reuther, who is over an economic barrel, may settle closer to company terms. But he hopes to salvage some propaganda material (at least for his members) by blaming management for high prices, unemployment, and the recession.

**Face Saver**—His statement is a tipoff to his tactics: "What is required is a gigantic clearance sale with prices slashed to move cars out of showrooms into consumers' garages. That would open the way for an increase in production and the re-employment of thousands of workers. Their purchasing power, in turn, would give upward impetus to the economy as a whole."

That thinking has some loopholes. Example: The Reuther plan requires cutting excise taxes. And as Prof. Daniel B. Suits, University of Michigan economist, has said: "Prices aren't the most important factor determining the car market. Consumer income and the total number of cars on the road have a much greater effect."

**Stall Unlikely** — The law says companies must listen to any reasonable proposal even though contracts have terminated. The union strongly hints it may pursue stalling tactics to hold out until the model changeover period when companies would be hurt most by a strike.

But the longer Mr. Reuther stalls, the more propaganda benefits companies gain. They can point out how labor is abetting unemployment and inflation by demanding more than firms can give.

Claims Harlow Curtice, GM president: "Prolonged jockeying by the union . . . would retard economic recovery by further undermining public confidence. . . . . The problem is to halt wage increases which are not earned and which breed more and more inflation." See the list of UAW demands on Page 45.

# Shipbuilders Run Aground?

**Cries of woe from builders are countered by the need for a modern U. S. merchant fleet. Will Congress pay the bill? No decision is likely until backlogs are worked down**

U. S. SHIPBUILDERS have lost orders for over 500,000 deadweight tons in the last three months, reports one of the nation's leading firms. Amounting to about $140 million, that's better than a 10 per cent cut in workloads. While the decline is not too precipitous, most shipbuilders view it as the beginning of their troubles. Present workloads amounting to over $1 billion (see table below) will be finished in 1959-60. A tremendous upsurge in new orders will have to come to keep the industry from falling into a major depression by the early '60s, the builders believe.

**Foreign Influence**—The lost tonnage is mostly in foreign orders. Up to 1956, foreign buyers supported the U. S. industry. In the last two years, the revamping of the American merchant marine has helped our builders; now they say a much bigger U. S. program is about all that can save them.

**Foreign Competition** — Foreign yards are fairly well filled through 1964, but foreign buyers, instead of turning to U. S. yards, are willing to wait until European and Japanese yards can handle their orders. They produce ships at about half the cost of U. S. yards and can turn them out faster.

**Another Opinion** — That's the most pessimistic point of view. Many of the country's east coast builders and the Shipbuilders Council of America, New York, adhere to it. But listen to Berney Wilburn, acting director of research, American Merchant Marine Institute Inc., Washington.

"If we are going to have an ocean-going fleet at all, U. S. builders are assured of substantial business through the next decade," he says. He charts calmer seas: 1. About 80 per cent of our fleet is of World War II vintage (13 to 17 years old) and must be replaced in the next decade if U. S. flag shippers intend to stay in business. 2. The 15 federally subsidized operators (Uncle Sam pays for about 40 per cent of the cost of ship replacement) are under contract to replace their ships when they are 20 years old; the Maritime Administration figures this will amount to 30 ships a year for U. S. builders. 3. About 85 per cent of the U. S. tanker fleet is in the domestic trade and must be U. S. built by law.

Mr. Wilburn believes the bulk of the U. S. fleet will be replaced in the next decade. Most optimistically, that could average out at about 90 ships a year for U. S. yards.

**Congress Will Decide**—While a world-wide boom in the '60s would probably solve U. S. builders' problems, most shipbuilding sources look to Congress for an answer. A Capitol Hill source on the House side doesn't give too much encouragement: "The builders always cry."

That authoritative source believes most of the screams are from easterners who are losing tanker orders —west coast yards are getting orders for the first time in years.

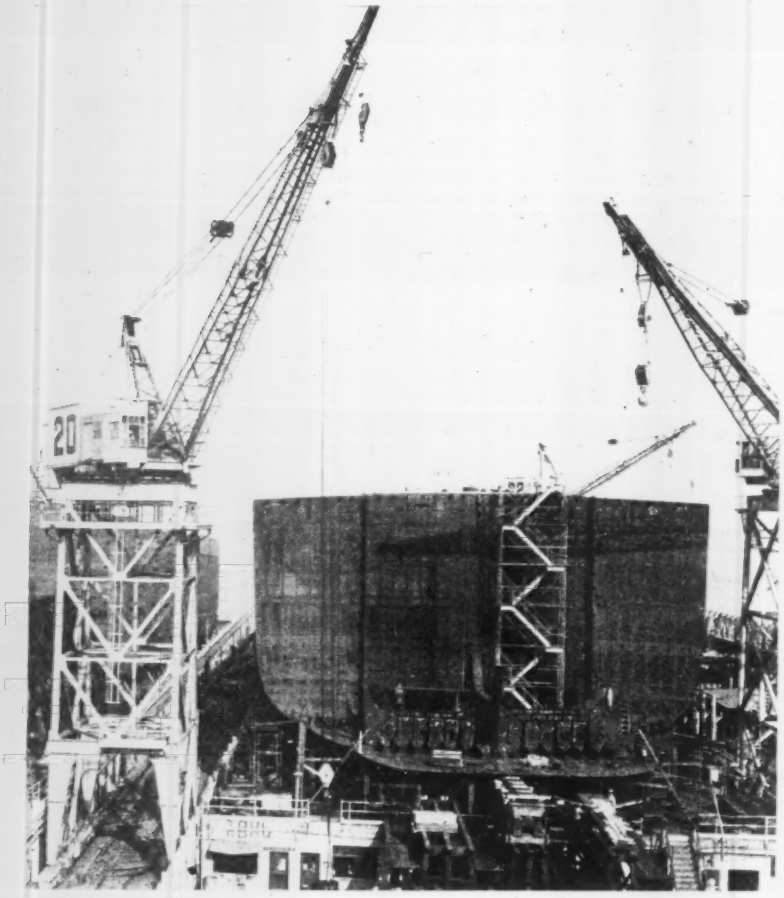
**Summing Up**—Seven major yards are ready to grab any order they can find; perhaps a dozen yards would like to stay in the business. Thirty ships a year from the Maritime Administration's replacement program won't support more than five yards at most. We will soon see another major decision in the history of U. S. economics. Plenty of observers are betting on a reduction in the number of builders before the end of the next decade.

## Busy U. S. Shipbuilders*

(As of Apr. 1)

| Name | Number of ocean-going merchant vessels under contract for construction 1958 | 1957 | Value (Millions of dollars) 1958 | 1957 |
|---|---|---|---|---|
| Bethlehem, Quincy, Mass. | 13 | 17 | $201.1 | $270.6 |
| Bethlehem, Sparrows Point, Md. | 19 | 26 | 201.3 | 241.4 |
| Bethlehem, Boston | 0 | 2 | —— | 4.0 |
| Bethlehem, Staten Island, N. Y. | 0 | 2 | —— | 7.7 |
| Bethlehem, Baltimore | 0 | 1 | —— | 1.8 |
| Bethlehem, San Francisco | 6 | 5 | 67.6 | 47.1 |
| Newport News Shipbuilding | 15 | 26 | 228.6 | 343.5 |
| Ingalls | 14 | 10 | 169.3 | 117.3 |
| Sun | 10 | 13 | 114.6 | 151.8 |
| New York Shipbuilding | 9 | 5 | 114.1 | 57.0 |
| Maryland Shipbuilding | 1 | 8 | 11.6 | 26.0 |
| Avondale Marine | 0 | 3 | —— | 10.5 |
| National Steel & Shipbuilding | 3 | 0 | 29.3 | —— |
| Todd | 2 | 0 | 22.0 | —— |
| TOTALS | 92 | 118 | $1159.5 | $1278.7 |

*Both private and government orders are included. Great Lakes builders and conversions are excluded.
Source: Maritime Administration's figures.



One of the four tankers Bethlehem Steel Co.'s Shipbuilding Div. is constructing at San Francisco is symbolic of the humming industrial activity on the West Coast. The shipyard has enough work to keep it busy into second quarter of 1959

# Watch the West Coast

**Rapid growth of population offers many business opportunities. The recession is being cushioned there by industrial expansion and other construction projects**

FOR business and sales opportunities, watch the West Coast—particularly California.

It is a "growth" area. Population is increasing sharply; industry is expanding.

Result: The West Coast is not feeling the recession as much as other regions.

California's population is multiplying twice as fast as any other state's—it's gaining an average of 1500 people a day. The California State Department of Finance predicts the state will have 16 million people by late 1960 and that before 1965 it will have the largest population of any state in the U. S. (California is now second; New York is first.)

**Growing Market** — California's rapid growth has put its steel consumption ahead of its production. The state is sixth in the nation as a consumer, but tenth as a producer.

This surging growth in markets is inspiring expansion of physical facilities — industrial plants, office buildings, hotels, highways and bridges, to name only a few.

The Pacific Coast's three biggest steel producers—Kaiser Steel Corp., Bethlehem Pacific Coast Steel Corp., and U. S. Steel Corp.—are adding to their west coast facilities.

**Kaiser Expands** — Kaiser Steel, whose steel plant is at Fontana, Calif., (50 miles east of Los Angeles) is adding about 1.4 million net tons to its present yearly steelmaking capacity of 1,536,000 tons. The increase will result from the installation of three L-D furnaces (also known as oxygen converters) which are expected to be ready for use late this fall. They will raise California's steelmaking capacity 42 per cent—to 4.7 million tons annually.

**Bethlehem Expands** — Bethlehem Pacific Coast is replacing the five small open hearths at its Seattle plant with two electric steelmaking furnaces. The project, to be completed this year, will raise the plant's steelmaking capacity from 246,000 tons annually to 420,000 tons and help boost the company's west coast capacity to around 1,220,000 tons—it's 1 million tons now.

**U. S. Steel Expands**—U. S. Steel's Columbia-Geneva Steel Div. is completing a third high-speed electrolytic tinning line at Pittsburg, Calif. It will boost the plant's annual tin plate capacity almost 55 per cent. To be ready for future expansion, the company has an option on about 600 acres adjoining the Pittsburg plant's present site (also around 600 acres).

In addition to installing additional facilities to make primary steel, Kaiser and Bethlehem Pacific Coast Steel are building related equipment, as well as constructing new home office buildings.

At Fontana, Kaiser Steel's expansion includes a fourth blast furnace, 90 more coke ovens, a new universal slabbing mill for the initial rolling of ingots, revamping of the 86 in., hot strip mill to increase output of hot-rolled sheets, a new electrolytic tin plate line which will double the mill's electrolytic tin plate capacity, and conversion of its 110-in. plate mill into a 148-in. mill.

At Seattle, Bethlehem Pacific Coast Steel's expansion includes a new 32-in. blooming mill, new soaking pits, improvements on the universal plate mill, a new 10 to 12-in.,

merchant bar mill, modernization of the metallurgical laboratory, and expansions at the roll shop.

**Get New Offices**—Both Kaiser and Bethlehem Pacific Coast Steel are erecting new home office buildings. A Kaiser Center building (28 stories) is underway at Oakland, Calif., the firm's home base. Bethlehem Pacific Coast Steel's new 15-story office building is under construction in downtown San Francisco. Moving of the steel division from the general office building at 20th and Illinois Streets in San Francisco will leave all its space for one of its present occupants, Bethlehem Steel Co.'s Shipbuilding Div.

**Ship Ahoy**—The shipbuilding division's outlook is the brightest since World War II. It has enough work on hand to operate at a good level at least into the second quarter of next year. It is building four tankers (32,650 tons each) and two passenger-cargo vessels and is converting the cruiser *USS Oklahoma City* into a guided missile ship.

**Unusual for Unions**—Encouraging to the shipbuilding division is the action west coast shipyard labor unions are taking. They are amalgamating so that a worker will be permitted to do more than one type of work in a shipyard. The unions are doing this to save jobs for their men by helping west coast shipyards compete with foreign yards.

**Under Construction**—The construction boom extends up and down the coast. Other companies are building new office buildings. In downtown San Francisco, steel is being erected for the 20-story Crown Zellerbach building, and the steel frame for the 12-story American Trust Co. building is completed. Hilton Hotels Corp. is to build a 1000 room, $23 million hotel in downtown San Francisco. It also will build a 300-room hotel at that city's International Airport.

Several other hotels and bank and office buildings will be built in that city. Projects already announced for the San Francisco peninsula will cost around a half billion dollars.

In Los Angeles, a half dozen office buildings are under construction. At Portland, Oreg., and Seattle there is an increase in major multistory building construction, and several new hotels and office buildings are in the planning stage.

# Seaton's Plan for Metals

**Program calls for multimillion-dollar subsidy over a five-year period. Chances for passage appear slim. Tariff Commission split on lead-zinc recommendations**

THE ADMINISTRATION'S answer to the domestic mining industry's pleas for relief came on Apr. 28 when Fred A. Seaton, secretary of the interior, presented to Congress a multimillion-dollar program to partially subsidize five metals. It calls for: 1. Cash payments to producers that would make up the difference between the market price of certain metals and a government-figured "stabilized" price. 2. More research and development on minerals.

**Specifics**—Secretary Seaton seeks a five-year program guaranteeing producers 27.50 cents a pound for copper, 14.75 cents a pound for lead, 12.75 cents a pound for zinc, $48 a short ton for fluorspar (acid grade), $36 a short ton unit for tungsten. Subsidies would be paid on a maximum 1 million tons of copper per year, 350,000 tons of lead, 550,000 tons of zinc, 180,000 short tons of fluorspar, and 375,000 short ton units of tungsten.

Under present market conditions, the program would operate like this: With zinc at 10 cents a pound, and the government guaranteeing 12.75 cents, Uncle Sam would be obligated to pay producers 2.75 cents for every pound of zinc sold. "The payment in each instance will be computed on the difference between the domestic market price and the stabilized price," Secretary Seaton said.

**How Much?**—The program is expected to cost about $161 million the first year. "The total annual stabilization payment from then on should diminish as production responds to demand and as our economy resumes it long term health and vigor," says Secretary Seaton.

As the second major part of the program, Secretary Seaton said the administration will request the Budget Bureau to increase U. S. Bureau of Mines funds by $5.5 million in fiscal 1959. Breakdown: 1. $2.5 million for research and development on superduty refractories to contain fission and fusion reaction; high temperature metals and alloys for high altitude jet engines and rockets; special structural metals for nuclear reactors; and new uses for rare metals; 2. $3 million for basic geologic research.

**Battle Looms**—The administration's measure will have opposition. Says one Senate source: "For Seaton's program to have been meaningful, he would have had to ask stabilized prices of at least 30 cents for copper, 17 cents for lead, 14 cents for zinc, $52.50 for fluorspar, and $42.50 for tungsten."

Reaction in the nonferrous industry varies. The biggest complaint among high tariff advocates is that the proposal would do nothing to hold down imports of foreign origin metal. Says one metalman: "With imports increasing, there's no assurance an industry could sell the maximum amount of metal allowed it under the plan."

On the other side of the coin, an importer poses this question: "What's to stop the domestic industry from lowering prices to freeze out foreign competition?"

**Worry**—The factor most troubling to domestic lead and zinc men is that this plan may be a substitute for the Tariff Commission's recommendations recently sent to the President. They fear Ike might hold up a decision on the commission's recommendations until his program is voted on.

Another factor: The recommendations are controversial. Commissioners split 3-3 on how much duties should be raised (although they agreed the industry needs relief) and on whether quotas should be imposed. Main points: The three Republican commissioners recommend a maximum increase in duties to 1.80 cents a pound for lead-bearing ores, 2.55 cents for lead pigs and bars, 1.80 cents for zinc-bearing ores, and 2.10 cents for zinc blocks, pigs, and slabs. The

three Democrats call for 1.50 cents for zinc-bearing ores and 1.75 cents for zinc blocks, pigs, or slabs.

Republican members also recommend that yearly imports of unmanufactured lead be held to 221,700 tons and unmanufactured zinc to 325,600 tons. The Democrats voted against quotas.

The President has these options: He can accept the recommendations of either side, reject both, or modify the proposals to suit himself. By law, he must make his decision within 60 days.

**Reaction**—A recommendation for higher tariffs had been expected by the industry, but the support for quotas surprised everyone. Reaction was immediate from free trade advocates. American Smelting & Refining Co. said if quotas are imposed it probably would be forced to close down two domestic lead smelters and one lead refinery and curtail zinc smelting operations. Says Robert P. Koenig, president, Cerro de Pasco Corp.: "The evidence seems overwhelming that to increase import restrictions on lead and zinc would prove an ineffective response to an admittedly temporary situation, and that the end result would be clearly a net loss to the nation."

Domestic producers are divided on how desirable quotas would be. Most would probably favor restrictions on metal imports but not on concentrates (which some import for their own needs). Few believe quotas would solve the long term problem.

**Muddle**—The mineral legislation program seems bogged down.

Importers and American companies that have foreign affiliations want one thing, strictly domestic firms another. Complicating matters is a constantly shifting government policy which has everyone confused.

It may be that Congress will eventually come up with legislation of its own. Pending are a score of bills designed to aid domestic metals, especially lead, zinc, and copper.

Irwin H. Such, left, STEEL's editor-in-chief, interviews Dr. Winkhaus, center, president, and Dr. Pohle, executive vice president, Mannesmann A.G., Dusseldorf

# German Steel Dips Slightly

ANOTHER big year is ahead for the German steel industry, but it won't be quite as good as 1957.

In an exclusive interview in Dusseldorf, Dr. Hermann Winkhaus, president, and Dr. Wolfgang Pohle, executive vice president of Mannesmann A.G., big German steelmaker, told STEEL that operations will be affected by a drop in domestic and export business.

The decline, they feel, will be only temporary. German consumers bought heavily to beat a price rise late last year but are expected to be back in the market within two months. German mills are not adversely affected by the auto industry as in the U. S.

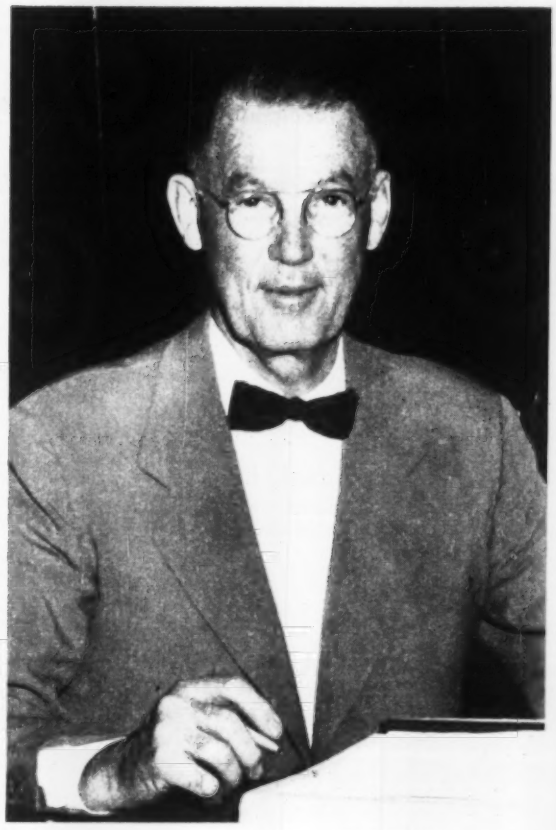
**Foreign Trade**—Steel exports, say Drs. Winkhaus and Pohle, are a vital factor in the economy but a "difficult problem." Mannesmann exported 28 per cent of its products in 1957. Sales of some products may be off as much as 30 per cent this year.

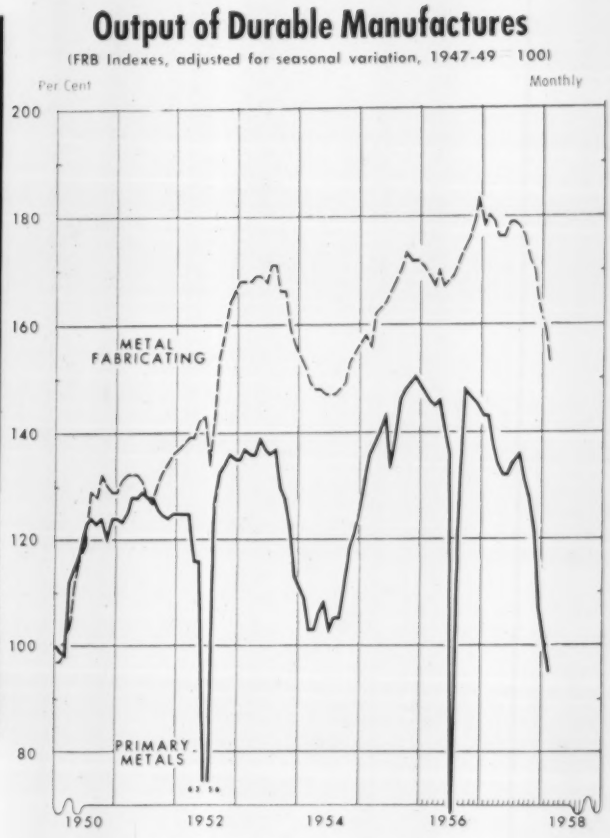
Orders on the books for large diameter welded line pipe will keep the firm's new Mannesmann-Hoesch plant busy for another year, the German steel executives reveal. New orders include 30,000 tons of pipe for Syria and another 25,000 tons for Argentina. Seamless pipe for the oil industry is moving slowly. Drill pipe shipments to the U. S. were stopped six months ago. Demand has also slowed in Canada.

Mannesmann buys most of its steel plates for large diameter welded pipe in the U. S. Currently, 16,000 tons are en route from a west coast mill—the plates were purchased at a price competitive with the German market. Large tonnages also come from a Detroit mill.

**This Year and Next** — German steel operations may taper off slightly in the next month or two, but production so far this year has set an all-time record. In the first quarter, German mills turned out 6,900,724 tons of ingots, or 258,970 tons more than they did in last year's first quarter.

If operations should hold at that rate, production for the year would be 27,602,896 tons, a gain of 603,896 tons over 1957. The improbability of that is reflected in deep cuts in export prices retroactive to Apr. 1. German domestic prices are not affected.






Frank R. Palmer, president, Carpenter Steel Co., compares activity of metal fabricators (top line on chart) with that of primary metal producers (bottom line)

# Inventories: Recovery's Key

RECOVERY from most recessions is triggered by exhaustion of inventories, says Frank R. Palmer, president, Carpenter Steel Co., Reading, Pa. "If inventories are cut too far during a slump, that can lead to panic buying when business swings up," he believes.

**Reason** — During a recession, fabricators of metals buy less raw material than they use. Differences are made up from inventories accumulated during the past boom. When they are finally brought into equilibrium, raw material must be purchased as fast as it is used, points out Mr. Palmer. Excessive cuts mean trouble.

Activity of primary metal producers is about 36 per cent under the fourth quarter peak of 1956, but their customers, metal fabricators, are down only about 16 per cent. In the 1954 recession, primary metals fell about 25 per cent below the 1953 high. Activity of fabricators dropped about 14 per cent.

"If primary metal producers were operating at 84 per cent of the last peak figure instead of 64 per cent, the added employment would be a more effective aid to ending the recession than artificial government stimuli," adds Mr. Palmer.

**Suggestions**—The steel executive suggests metalworking's top management should ask itself these questions and act accordingly:

- What is our sales forecast for the second half?
- Assuming it is correct, what will our normal inventory needs be?
- Are inventories too high or too low for the production outlook?

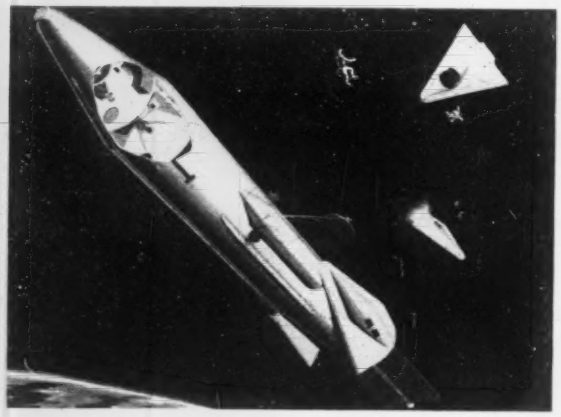
"In view of the wage increase scheduled in the steel industry, this is certainly not the wise time to be cutting inventories below the needs of second half forecasts," says Mr. Palmer. He concludes:

"Maintaining an intelligent inventory position is good business and could facilitate an economic recovery without increasing the national debt or leading to more inflation."

## Finds New Ore Bed

A deposit of iron-manganese ore that may be of commercial interest is reported by the Maine Department of Economic Development. The ore bed lies in southeastern Penobscot County.

Preliminary reports indicate it is at least 8 miles long and about ¼ mile wide. The department says more work must be done to determine such things as quality and the extent of the discovery.



Convair Div., General Dynamics Corp.

## Space Programs Breed New Competition

INTERSERVICE rivalry is becoming a cliche. More businessmen should understand that intercompany rivalry is the better phrase. Since last October, probably 100 different long range space programs have been presented to the Pentagon by U. S. firms. Each service has chosen its favorite contractors. Intercompany, not interservice, rivalry will force the decision on which program the U. S. will follow.

Subcontractors should understand that thoroughly before committing themselves to one service or one company. Smart firms will test their abilities to participate in more than one program. The cancellation of the Navaho missile last year is the classic case history in this field. More stoppages of space, missile, and antimissile missile programs are likely.

Convair and Avco, for example, have come up with a joint proposal for putting man into space within two or three years. The plan definitely overlaps North American's efforts with the X-15. Both will probably be carried into final development testing; then one will be canceled. Other examples: The Army and Air Force have rival antimissile missile systems. The Air Force is not just trying to sell its system over the Army's; it is knocking the whole idea of antimissile missiles. The Navy sees competition for its Polaris from the Air Force's Minuteman.

Basically, the services are not waging these struggles; the real rivalry is among companies competing for the contracts. The services become their tools.

Crux: Don't be misled by headlines shouting: "Army, vs. Navy." Look behind them for company positions to decide how your firm can profit most.

## Knowland Loses His Fight for Labor Laws

Sen. William F. Knowland (R., Calif.), who is standing on a right-to-work platform in his state's gubernatorial race this fall, attempted to attach union control measures to a bill which calls for the registration, reporting, and disclosure of private employee welfare plans. Majority Leader Lyndon Johnson (D., Tex.), not always prounion, led the fight for the Senate labor forces. The registration measure passed the Senate unanimously, but without a single conservative amendment accepted.

Because labor legislation is a rare thing in an election year, Republicans generally say they are satisfied with results on welfare plan registration. Democrats counter that it was their idea in the first place. Both parties will claim credit this fall.

## Potter Leads Fight Against ODCM

President Eisenhower's Reorganization Plan No. 1 of 1958 went to Congress last week: It provides for the uniting of the Office of Defense Mobilization and Federal Civil Defense Administration into a new agency, the Office of Defense & Civilian Mobilization.

Sen. Charles Potter (R., Mich.) has introduced a resolution to stop the merger (scheduled for July 1) until the entire plan is reviewed in Congressional hearings. The senator particularly objects to ODCM's proposed status as an operating agency directly under control of the President. The old ODM is not an operating agency; it delegates its powers to other agencies more subject to control by Congress (such as the Business & Defense Services Administration and the General Services Administration.) The old FCDA was the child of Congress; the new agency would not be, unless Senator Potter's resolution goes through.

The trouble ODM has been in lately (stockpiling policies and fast tax writeoffs) has seriously hurt the agency's usefulness, some legislators feel. Many congressmen believe the new plan is an attempt to wipe the slate clean without losing any Presidential powers to Congress.

## Small Business Help Introduced by Mills

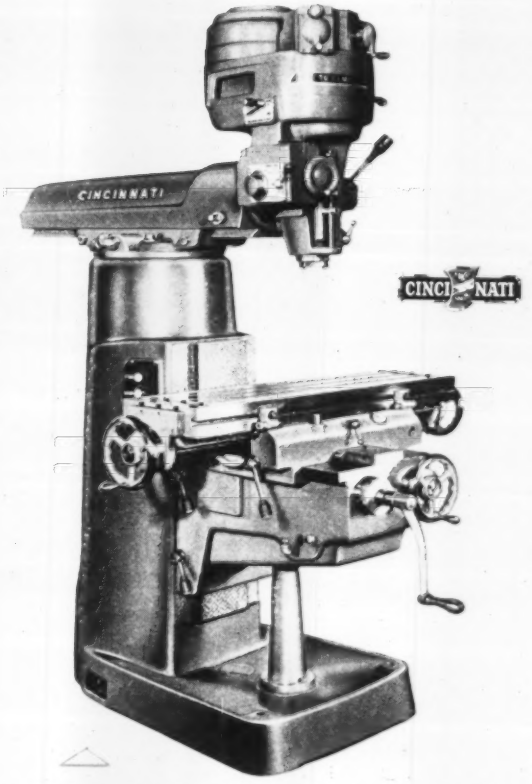
Here's small business legislation that stands a good chance of passage this session because it comes from Rep. Wilbur Mills (D., Ark.), chairman of the Ways & Means Committee, and Rep. Daniel Reed (R., N. Y.), ranking minority member of the committee.

The bill calls for: 1. An ordinary (rather than capital) deduction for income tax purposes on losses from investment in small business stocks up to $50,000 in one year. 2. Accelerated depreciation on used property up to $50,000. 3. Partnership-type tax treatment by small business shareholds, if they want it. 4. Payment of estate taxes over ten years.

Both Messrs. Mills and Reed will probably recommend the legislation be retroactive to Jan. 1, 1958.

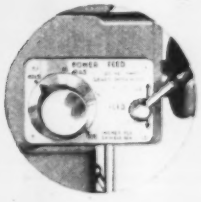
Another small business development: Federal Reserve Board Chairman William McC. Martin told Congress that some small businesses are not getting all the capital they need. He supports S. 3651, which calls for a Small Business Investment Administration to provide federal funds for long term financing. Small Business Administration lending is usually short term.

# meet 1-D ..newest member of the CINCINNATI TOOLMASTER Family



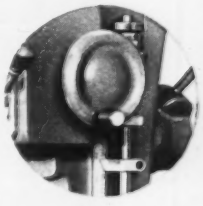

**New CINCINNATI No. 1D Toolmaster Milling Machine.** Catalog No. M-2017. Other styles: 1A, 1B and 1C; catalog No. M-1870-4.

**Spindle speeds** are changed instantly. Merely select the high or low range and then rotate this control lever to the speed desired. Speeds are dial indicated.



**For boring and drilling operations,** you'll want power feed to quill, at slight extra cost. Three feed rates; knob selected; up and down; .0015", .003" and .006" per rev.

**Quill feed handwheel,** mounted on front of the spindle head, advances the quill in fine feed progression. A lever on the right-hand side quickly advances or retracts the quill.



Hundreds of CINCINNATI Toolmaster Milling Machines — the familiar 1A, 1B and 1C styles — are giving an excellent account of themselves in shops throughout the country. And now the new 1D Toolmaster extends the versatility of this fine family of machine tools still further. Exclusive 1D features and advantages include:

**Infinitely variable spindle speeds.** 100-3800 rpm

**Instant selection of spindle speeds** . . . through a control lever on front of the spindle head

**1½ hp spindle drive** . . . and it's all usable

**No. 40 standard taper hole in spindle** . . . and positive key drive for arbors and collets

**Power quill feed** (extra) . . . up and down; three feed rates; power trip-out

These and other features and advantages give 1D Toolmasters the highest performance rating for reducing the cost of vertical and angular milling operations, and, with additional equipment, boring and shaping operations as well. Now's the time to replace your worn out ¾ to 1½ hp milling machines with new CINCINNATI Toolmasters. Complete information in attractive catalogs. May we send copies to you?

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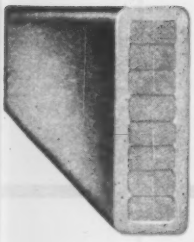
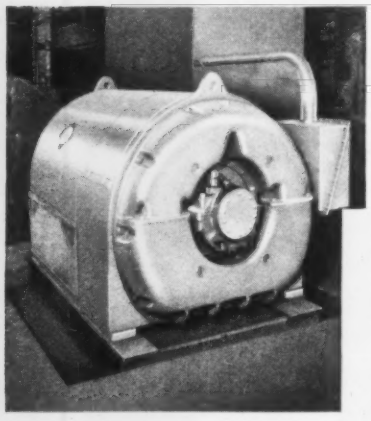
**MILLING MACHINES • BROACHING MACHINES • CUTTER AND TOOL GRINDERS • SPECIAL MACHINE TOOLS • METAL FORMING MACHINES HARDENING MACHINES • CUTTING FLUIDS • GRINDING WHEELS**

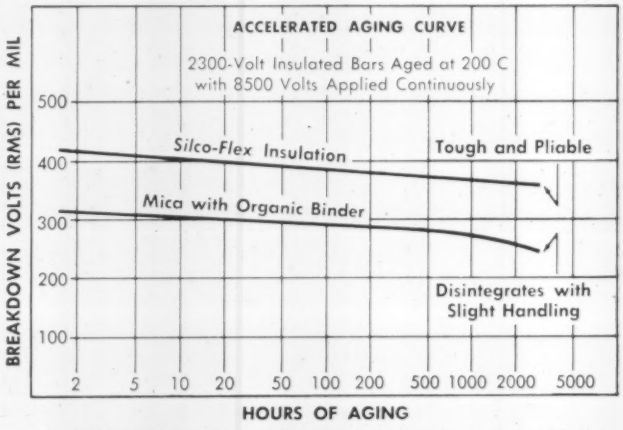


motor with void-free insulation

# New motor withstands abrasion, physical stresses, moisture, heat aging...



revolutionizes motor protection practices in metals industry



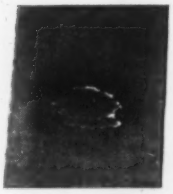

**Accelerated aging with a combination of high voltage stress and temperature emphasizes superiority of *Silco-Flex* insulation over mica-organic binder type. Electrical and mechanical properties are little changed by conditions that destroy old-fashioned systems.**

Remarkable new insulating systems combined with advanced mechanical features provide a completely new concept in motor protection — the *Super-Seal* motor. This revolutionary new motor gives you complete protection from conductive dusts, moisture and other contaminants, even with so-called drip-proof motor enclosures.

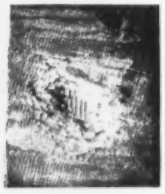
**Silco-Flex stator coil** insulating system. A homogeneous, void-free dielectric barrier of vulcanized silicone rubber possessing a resistance to abrasives and most corrosive or chemical atmospheres. So moisture-proof it can be cleaned by hosing down.

**Integrated field coils** in synchronous machines are completely sealed against contaminants, bonded and locked against mechanical forces.

For additional information, call your nearby A-C office or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin.



*Silco-Flex Insulation*



*Polyester Mica Tape*

*Asphaltum Mica Tape*

**Note difference in abrasion! Insulation shown after sandblasting for one minute with 90-grit aluminum oxide and 100-psi air from distance of six inches.**

*Super-Seal* and *Silco-Flex* are Allis-Chalmers trademarks.

**ALLIS-CHALMERS**

A-5735

## Frequency and Effect of Strikes in the U. S.*

| Year | No. of Strikes | Workers Involved | Mandays Idle |
|---|---|---|---|
| 1946 | 4985 | 4,600,000 | 116,000,000 |
| 1947 | 3693 | 2,170,000 | 34,600,000 |
| 1948 | 3419 | 1,960,000 | 34,100,000 |
| 1949 | 3606 | 3,030,000 | 50,500,000 |
| 1950 | 4843 | 2,410,000 | 38,800,000 |
| 1951 | 4737 | 2,220,000 | 22,900,000 |
| 1952 | 5117 | 3,540,000 | 59,100,000 |
| 1953 | 5091 | 2,400,000 | 28,300,000 |
| 1954 | 3468 | 1,530,000 | 22,600,000 |
| 1955 | 4320 | 2,650,000 | 28,200,000 |
| 1956 | 3825 | 1,900,000 | 33,100,000 |
| 1957 | 3673 | 1,390,000 | 16,500,000 |

*Included are work stoppages resulting from labor-management disputes and involving six or more workers for at least one full day or work shift.

# 1965 Strikes in '57

**Metalworking industries hardest hit. They report 1148 strikes idled 526,250 workers for about 5.9 million mandays. Wages and hours most common cause**

THE FIVE major metalworking industries suffered 953 strikes in 1957 (nearly half the 1965 work stoppages reported last year by U. S. manufacturing firms). Department of Labor statistics show that strikes against those groups (primary metals, fabricated metal products, electrical machinery and equipment, other machinery, and transportation equipment) idled 478,000 workers for 5,198,000 mandays.

When four other metalworking groups (ordnance and accessories, furniture and fixtures, instruments and related products, and miscellaneous manufacturing industries) are added, the totals are pushed to 1148 strikes idling 526,250 workers for 5,897,000 mandays.

The 1965 strikes reported by manufacturing firms as a group involved 778,000 workers for 9,390,000 mandays. Nonmanufacturing industries were hit by 1711 work stoppages. Some 610,000 workers were idled for 7,080,000 mandays.

**Why** — Disputes over wages, hours, and supplementary benefits were the most common reasons for strikes last year. Government figures show such grievances caused 1730 strikes. About 752,000 workers were involved and work was stopped for 11.6 million mandays.

Other working conditions—such as job security, shop conditions, or workloads—caused disputes resulting in 837 work stoppages. Union organization coupled with questions of wages or hours caused another 309 strikes. Disputes arising from problems of union organization alone precipitated 442 stoppages. Jurisdictional problems resulted in 326 disputes.

**When and Where**—The frequency of new strikes peaked in the late spring and early summer in 1957 and dropped off sharply in November and December. May was the high month with a total of 446 new strikes (May was also high in '56 with 478 new stoppages reported).

As might be expected, New York (460), Pennsylvania (440), and Ohio (355) were hardest hit. Other states reporting more than 100 strikes: New Jersey (238), California (235), Michigan (208), Illinois (199), Massachusetts (144), West Virginia (139), and Missouri (111).

New York-Northeastern New Jersey (467), Philadelphia (130), and Detroit (120) were the only metropolitan areas to be hit by more than 100 stoppages in 1957.

## Kaiser Steel: Detective

Having trouble preventing the the theft of small tools and materials from plants?

A technique used by Kaiser Steel Corp. at its Fontana, Calif., steel plant may solve your problem.

The gate guard has a dispensing tube that holds 100 discs resembling poker chips. Ninety of them are white, ten are red. When an automobile arrives at the exit gate, the guard flips the dispenser button. If a white chip drops out, the auto is waved on. If a red chip comes out, the car is searched.

Chances are only 1 in 10 that a departing car will be searched. But no one, not even the guard, knows when.

Result: The system eliminates the need to search every car, yet the selection of cars to be searched discriminates against no one.

## Polaris Launcher Tested

Launching equipment for the Navy's Polaris has completed numerous firings of dummy missiles, reports Westinghouse Electric Corp., Pittsburgh. The corporation holds a $10-million prime contract for development work on the Polaris.

The missile will be launched above or below water. It's the nation's first ballistic missile assigned to specially equipped naval ships.

## Metalworking's Fringes Are High

(For average metalworking wage earner)

| | |
|---|---|
| Hourly base rate | $2.24 |
| Hours | 40 |
| WEEKLY BASE EARNINGS | $89.60 |
| Social Security | 1.61 |
| Unemployment Compensation | 1.08 |
| Workmen's Compensation | 0.98 |
| Pensions | 2.42 |
| Life, medical, accident insurance | 2.15 |
| Profit sharing, bonus, etc. | 1.34 |
| Supplemental Unemployment Benefits | 2.00 |
| Vacations, paid holidays | 5.28 |
| Rest periods, wash-up time, coffee breaks | 2.33 |
| TOTAL WEEKLY EMPLOYMENT COST | $108.79 |

Source: Compilations based upon Commerce Department figures and U. S. Chamber of Commerce survey

# Check Your Fringe Costs

**With today's pressure on prices and profits, this is another area in which alert management can hold the reins on costs. Here are some guideposts**

YOU'LL PAY $1.56 per manhour for fringe benefits by 1975, predicts one management consultant. In metalworking, they come to nearly 48 cents per manhour now. Many plants pay more: International Harvester puts its cost at 65 cents.

Originally only "something extra" to help employees meet emergencies, fringe benefits have snowballed into a multibillion dollar industrial way of life.

**Definition**—Items included in the figures above: Social Security, Unemployment Compensation, Workmen's Compensation, pension and welfare benefits, profit sharing and bonus plans, SUB, and pay for time not worked (vacations, holidays, rest periods, coffee breaks, and wash-up).

**The Spiral**—Several forces are driving costs upward:

1. Union pressure for more benefits. SUB is a major addition of recent origin. Now Walter Reuther and his United Auto Workers want profit sharing.

2. Union pressure for the expansion of present benefits, such as the UAW demand to enlarge SUB coverage from 25 to 52 weeks.

3. Inflation is also taking its toll. Medical and health costs have climbed 0.5 per cent per month for the last ten years.

**Some Help**—Want to minimize your fringe costs? You can start here, suggests Edwin Shields Hewitt & Associates, consulting firm:

1. Make sure you have a clearly defined policy of what you're trying to do. Spell it out in terms of these benefits: Old age, death, sickness and disability, medical care, unemployment.

Without specific policy, you run the risk of a high-cost hodgepodge program which can make for poor employee relations.

2. Make sure you're organized for effective administration. Proper co-ordination of the financial function and employee contact activities is needed to keep administrative costs down and avoid duplication.

3. Investigate the different ways of financing each program, particularly retirement, pension, and medical care.

**Medical** — Medical care is the most expensive single benefit. Of the $4.9 million in total benefits paid by Inland Steel Co. in fiscal 1957, $1.7 million was for hospital and surgical claims of dependents of employees alone. Such statistics point up why major medical programs are getting more attention.

## But They'll Go Higher

**Retirement—**

- Increasing benefits
- Vesting privileges
- Variable pension amounts
- Split funding of reserves, using insurance and trust funds

**Unemployment—unions are seeking through SUB—**

- Wider eligibility for benefits
- Higher takehome pay level
- Extension of benefit period

**Illness—**

- Major medical coverage
- Extension of protection to retired employees

**Death—**

- Increasing benefits
- Extension of benefits after retirement
- Level funding through pension trusts

Higher costs are accounted for by:

1. Inflation. 2. Emphasis on Blue Cross type plans has brought about overuse. 3. Improved medical practice has resulted in expanded usage of benefits. 4. Because the individual shares in the expense of a major medical plan, he has a definite interest in controlling its cost.

**Standard Coverage** — General Electric Co.'s program highlights the basic features of major medical plans.

- Employees pay part of cost.
- Benefits have a $7500 maximum in one year and $15,000 during a lifetime. In some instances, benefits can be renewed.
- Hospital, surgical, and diagnostic x-ray expenses have a $25 deductible feature. The plan pays the next $225 and 85 per cent of all costs above that.
- Physicians, nurses, drugs, medicines obtained outside the hospital, laboratory charges, and equipment rentals have a $50 deductible feature. Seventy-five per cent of the balance is paid under the plan.

Most officials emphasize that you probably won't cut benefit costs by switching to a major medical from a Blue Cross type plan. You should, however, be able to provide more benefits for the same cost. In some states, Blue Cross offers an optional deductible plan similar to that of major medical policies.

**Retirement**—In financing pension and retirement programs, you'll hear more arguments in favor of trust funds, versus insurance, for two reasons:

1. The desire to inflationproof pensions for the employee.

2. The possibility of lower financing costs to the company because of the long term appreciation of stocks.

Here, again, the experts advise: Move cautiously; your own situation and objectives will dictate what's best. Insurance gives you a more complete package and guarantees the benefits. Trust funds allow greater diversification in the investment of your money.

A recent development drawing the attention of smaller firms is the pooled investment fund. Continental Illinois National Bank & Trust Co., Chicago, has a $20-million pooled fund which is typical.

There's no limit on the amount you can invest in the fund, and income is immediately reinvested. The Continental Illinois plan combines investments in equities and fixed income property—participants can specify the proportion.

Typical programs provide a pension benefit equal to 1 per cent of compensation at retirement multiplied by years of service, says Robert Farwell, assistant secretary at Continental Illinois. Programs cost 3 to 8 per cent of the payroll, depending upon the retirement age and age spread of employees.

Two other points: 1. Advancing the retirement age by two years to 67 can save 15 per cent in pension costs, says Geoffrey Calvert, vice president of Alexander & Alexander Inc. 2. Each extra 0.5 per cent of earned income in a trust can cut total pension costs by 12 per cent.

**Ready-Made Plan**—Hewitt & Associates developed a packaged program for an Ohio firm. Its basic features:

1. Each year the company sets aside 15 per cent of its profits before taxes to finance it.

2. Benefits are provided for death, disability, medical care, retirement.

3. What's left after benefits are paid out each year goes into a profit sharing trust. Money is allocated on the bases of salary and service.

4. Money in each account—if greater than specified benefits—goes to the individual when he retires or is disabled—or to his estate when he dies.

Advantages of the plan cited by Mr. Hewitt:

1. Costs are controllable.

2. Costs are correlated to company earnings.

3. Employees have mutual interest in the plan as a profit sharing device.

4. It's designed for efficient administration.

**Summary**—Many executives feel that lack of communication is the shortcoming in most programs—the employee doesn't really know how much he is earning in terms of fringe benefits.

Takehome pay is the only wage he's aware of. Perhaps a listing of benefits on his pay check would emphasize his total pay.

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• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

# JONES & LAMSON MACHINE TOOLS

the man who needs a new machine tool is already paying for it

## Out-of-this-World Accuracy

Whether they're destined to go "out of this world" or not, many jobs demand some "out of this world" machining. Here's one, on a J & L lathe which is adapted for two-way tracing from the hexagon turret. Critical dimensions on both internal and external tapers, plus several intricate contours are finish-machined in one chucking.

A three-way indexing template holder is push-button controlled. Thus, down-time for template changes is eliminated, and the 180° tracer continues to machine on both the forward and return feed of the saddle carriage.

A single selector switch disengages the tracing unit and the machine is ready for normal* turret lathe operations.

*("Normal" for J & L turret lathes means unsurpassed accuracy, high production, and low, low maintenance.) For details, write for our descriptive folder No. 5425. Jones & Lamson Machine Company, 517 Clinton St., Springfield, Vermont.

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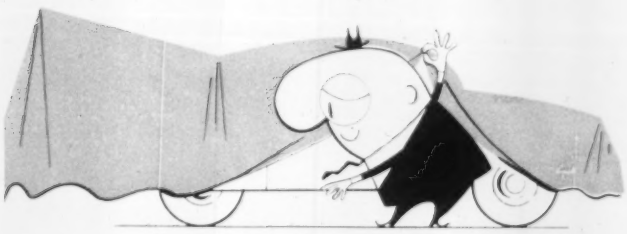

## NEW MODELS WILL COME EARLY . . . IF

**Tooling is on time.**

**Sales trends demand it.**

**It will help 1960 plans.**

# Consensus: Early '59s

INDUSTRY hopes autodom can offer most of its 1959 models between mid-September and early October. Early introductions, bringing badly needed business to suppliers, could hasten the economic upsurge expected to accompany new car premieres.

**Tooling**—Final deadline for delivery of tools and dies is June 31—almost a month earlier than usual. Die programs must be completed by June 15. Although a fair amount of tooling has already been placed for 1959 cars, ready availability of labor and materials means there will be no laggards.

Chrysler Corp. and some General Motors divisions have been making more extensive changes than they'd planned on earlier. Part of the tooling has been extended to July 15. That's the absolute limit, according to Detroit toolmakers. In fact, many shops are already looking with concern to the seasonal slump that will hit them by mid-July instead of mid-August.

**Sales Demand**—The poor sales showing of 1958 cars is also a supporting factor for early introductions.

More important, automakers feel new cars will provide more work, encouraging customers to start buying and hasten recovery.

Unfortunately, the problem isn't that simple. Before motordom can throw its 1959 offerings on the market, it has to be sure enough of the '58s have been consumed to make the venture worthwhile.

New car inventories are shrinking as dealers strengthen the sales efforts and producers continue to slash output. But they're still above the 800,000 mark. Industry talk has it that company chiefs would like stocks around half a million or less when '59s go on sale.

**Look Ahead**—Finally, pressure for early introduction comes from men responsible for 1960 models which already are far advanced in planning and design. The sooner 1959 jobs get to dealers, the quicker automen can get a tipoff on last minute changes they should make on the next year's offerings. GM is especially interested this year because it wants to make last minute checks on unit body costs.

**GM Wary**—Although the company can't officially confirm it, GM is moving toward a single body shell for its 1959 cars. (It now has three basic bodies for its five car lines.)

Its aim: Put the money sayed into new quarter panels, fenders, and grilles every year. Detroit still believes annual styling change is a major factor in sales success, and the bigger the change the better—if it can be paid off in a year.

With this theory in operation, GM believes a unitized body will allow cheaper changeovers.

If it should want to begin unitized construction in 1960, the commitment should be made by January at the latest. It means the sooner '59s come out, the quicker GM designers and cost men can check the feasibility of the change.

**Chrysler Pushing**—Although such hasty action is foreign to GM's nature, competition may force it. Chrysler is committed to a semi-unit body in 1960 (unless it has completely fooled Detroit), and Ford is reaping experience with Lincoln and Thunderbird which are unit built.

Chrysler is already using a single body shell with alterations for Imperials and also wants annual styling changes. E. C. Quinn, Chrysler's new vice president and general sales manager, automotive products, asserts that the growth of the industry depends on the ability of engineers to produce dramatic advancements in cars each year.

**Outlook**—These are factors motordom is pondering as it waits to set introductory dates.

It means unveilings will depend mainly on how quickly present inventories go down. If companies don't hit standard volume, they're apt to spring 1959 cars

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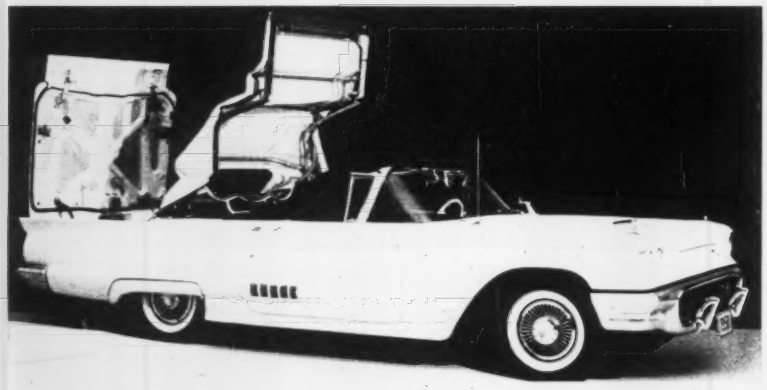

**FORD'S THUNDERBIRD** finally gets a soft top. The four passenger, unit body car is designed so the top folds into the luggage compartment much like Ford's convertible hardtop roof. This design eliminates a "boot" and takes up no rear seatroom. Ford's still making its hardtop T-Bird; it's processing a 10,000 order backlog.

early no matter how many '58s remain unsold.

## Chrysler Details Shake-Up

Three corporate groups have been established by Chrysler to take over responsibilities formerly handled by each division: Sales and advertising, manufacturing and assembly, and product planning. The move is expected to strengthen the management structure by placing more control in the corporate office.

L. L. Colbert, company president, says: "A basic purpose is to unify responsibilities in the sales and marketing areas; to obtain greater market orientation and to enable the divisions, without production and assembly responsibilities, to concentrate on product planning from a customer point of view, service, dealer relations, sales promotion, and advertising."

In other words, the corporation will plan and build the cars and establish market strategy. The divisions will sell them. This is a reversal of the decentralization trend autodom has followed so long.

**Rundown** — Heads of the new groups and their titles: Byron J. Nichols, group vice president, automotive sales; R. S. Bright, group vice president, automotive manufacturing; Robert P. Laughna, corporate vice president in charge of the corporate planning staff. Messrs. Nichols and Laughna are new vice presidents.

Each Chrysler division is now headed by a general manager-vice president. They are: Harry E. Chesebrough, Plymouth; M. C. Patterson, Dodge; J. B. Wagstaff, De Soto; C. E. Briggs, Chrysler and Imperial. They report to Mr. Nichols.

John Mansfield, former Plymouth chief, joins the staff of E. C. Row, newly elected first vice president and chairman of the administrative committee. Irving Woolson, De Soto's former president, is vice president and director of manufacturing services under Mr. Bright. E. C. Quinn, previously Chrysler division head, is vice president and general sales manager under Mr. Nichols. Mr. Patterson keeps his job, but his title is changed.

**Poor Profit**—The Chrysler regrouping has been under study for some time, but insiders say the firm's poor first quarter showing hastened its coming.

Mr. Colbert says the company lost $15.1 million in the first quarter, compared with net earnings of $46.5 million in the same period of 1957.

Sales were $537.2 million, or 53 per cent below those of $1.1 billion in the first quarter of '57. Chrysler has shipped 185,888 cars and trucks, vs. 420,880 units in the same year-ago period.

**Not Sudden**—Actually, the move started several months ago when Chrysler began shifting manufacturing activities. The news was that De Soto and Chrysler assemblies would be combined in 1959. Now the company says Imperials will be built in a separate plant.

Motordom suspects the shifts are just beginning. De Soto seems destined to become a nameplate, the De Soto division a sales staff. There's also talk of setting up a division similar to GM's Fisher Body.

### U. S. Auto Output

Passenger Only

| | 1958 | 1957 |
|---|---|---|
| January | 489,357 | 641,591 |
| February | 392,112 | 571,098 |
| March | 357,049 | 578,826 |
| 3 Mo. Total | 1,238,518 | 1,791,515 |
| April | | 549,239 |
| May | | 531,365 |
| June | | 500,271 |
| July | | 495,629 |
| August | | 524,354 |
| September | | 284,265 |
| October | | 327,362 |
| November | | 578,601 |
| December | | 534,714 |
| Total | | 6,117,315 |

| Week Ended | 1958 | 1957* |
|---|---|---|
| Mar. 29 | 93,844 | 130,233 |
| Apr. 5 | 64,318 | 130,318 |
| Apr. 12 | 84,997 | 126,194 |
| Apr. 19 | 73,219 | 118,327 |
| Apr. 26 | 59,130† | 123,633 |
| May 3 | 68,000* | 119,999 |

Source: *Ward's Automotive Reports*. †Preliminary. *Estimated by STEEL.

## AMC Reports Earnings

American Motors Corp. reports it made $7.3 million profit in the first half of its fiscal year (through Mar. 31). It lost $5.3 million in the first half of its 1957 fiscal year.

George Romney, president, says net sales for the period totaled $227.3 million, more than 20 per cent above year-ago levels. He expects AMC to make a profit in the June quarter, too, but adds that vacations, inventory taking, and model changeovers may not make profits possible in the final quarter ending Sept. 30.

The company is building at a rate of 15,000 cars monthly and has added 280 dealers since Jan. 1. Mid-April sales reports show since 1958 models came out, 71,264 Ramblers have been sold, vs. 41,936 in the comparable 1957 period.

In the smaller car field, Mr. Romney adds Rambler American sales have exceeded expectations. AMC's imported Metropolitan shows a 15.4 per cent sales increase (5727 against 4961) so far in this fiscal year.

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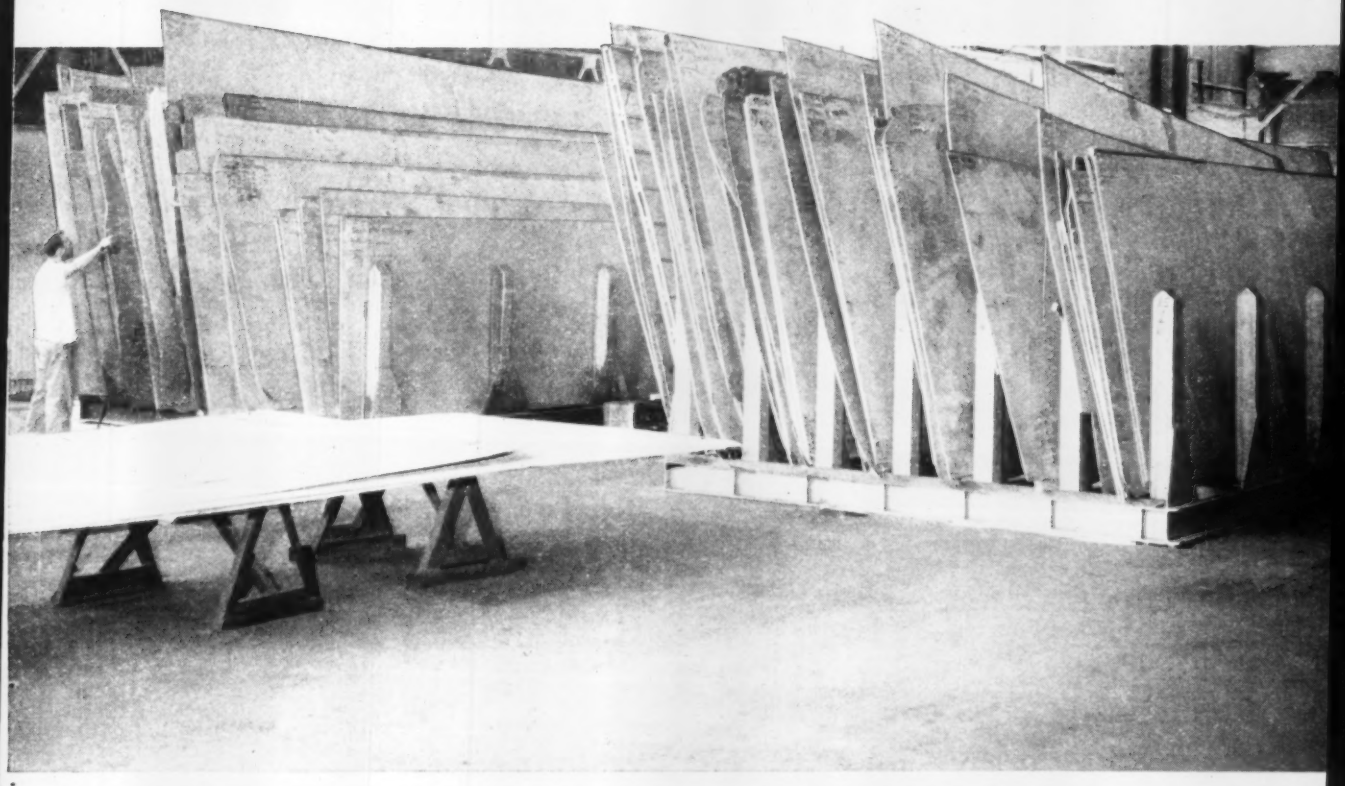

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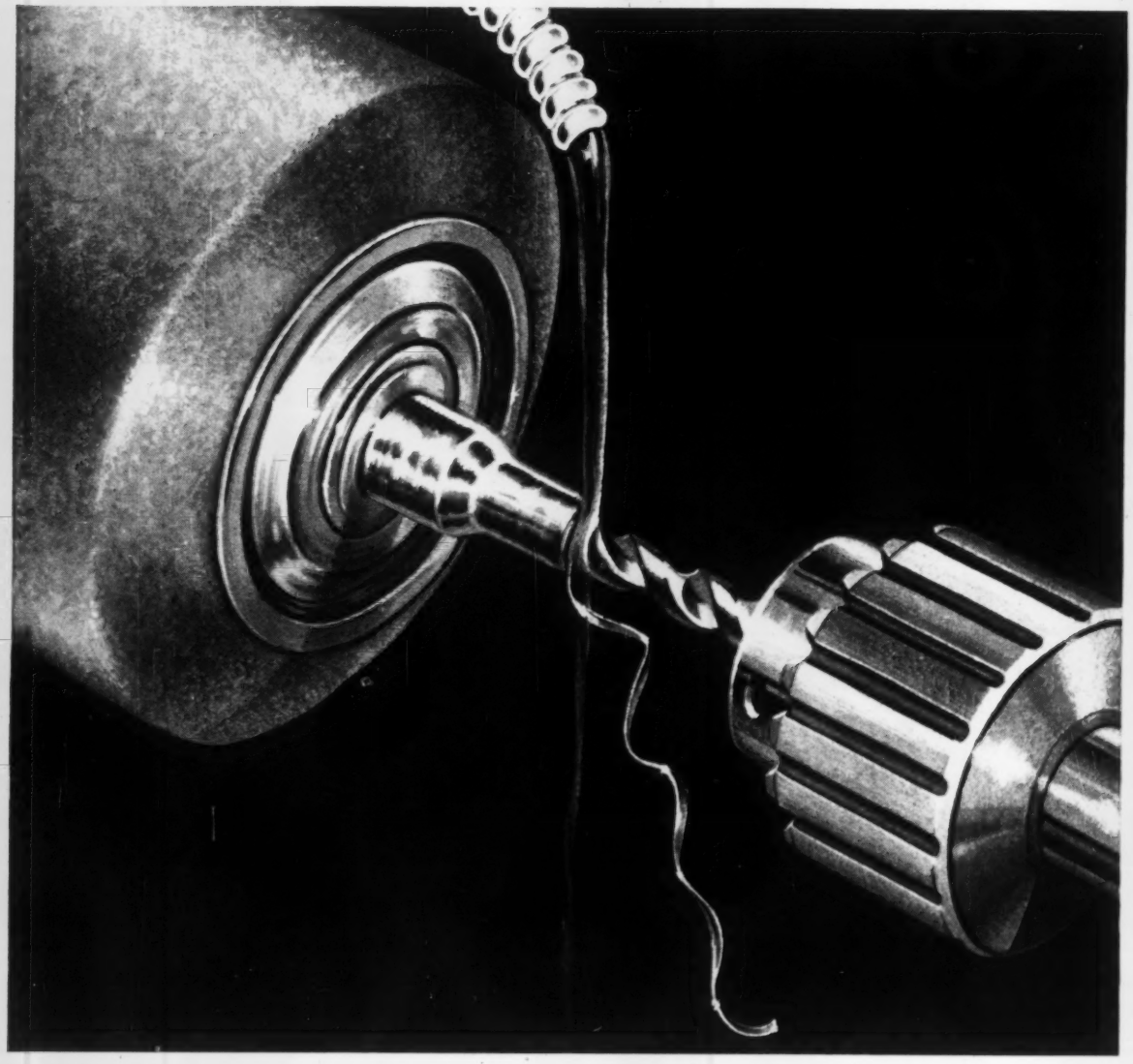

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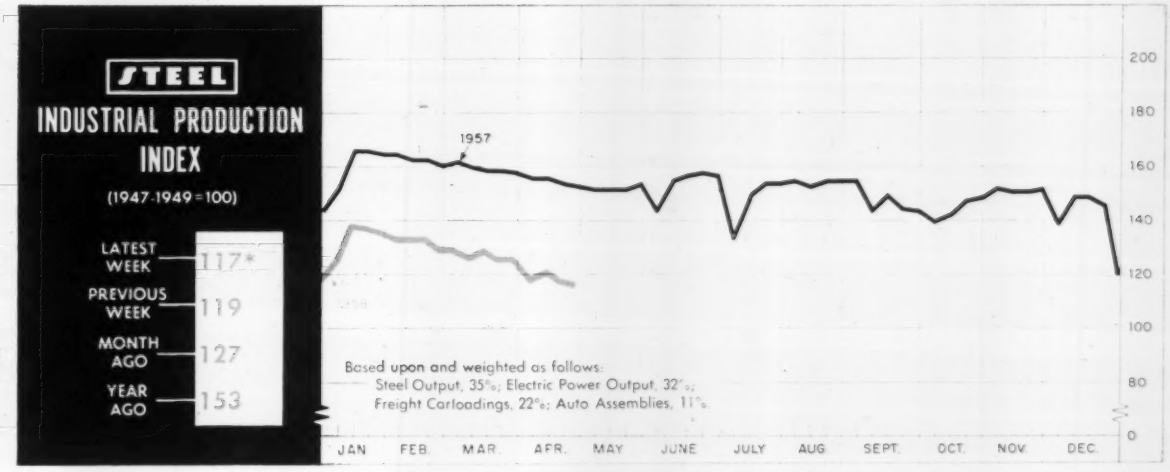


*Week ended Apr. 26.

# Appliance Men Back 'Buy It Now' Campaign

APPLIANCE manufacturers think they see the beginnings of an uptrend in orders, and many are backing the "buy it now" movement in an effort to keep it going.

**Industry Action**—The American Home Laundry Manufacturers' Association at its convention last month launched an industrywide campaign on the theme that a purchase now is an investment in the future for everyone. (The association claims that the purchase of an automatic washer supports a worker for ten days.) Judson S. Sayre, president of the Norge Div. of Borg-Warner Corp., Chicago, proposed a national move by all durable goods industries and trades to create a positive consumer attitude.

Ralph J. Cordiner, chairman of General Electric Co., Schenectady, N. Y., has announced that GE will promote an "operation upturn" program. One aim is to create and offer attractive credit arrangements for customers. Other aims are to speed up delivery schedules, improve quality, and reduce causes for customer complaints.

**Speed Up** — In explaining the move, Mr. Cordiner says: "The recent slight upturn in orders can be turned into a definite trend and then snowball into a steady recovery if business and industry will join in a fresh, concerted effort to go after the orders."

The "slight upturn" he mentions can be seen in stepped-up production schedules throughout most of the appliance industry. Whirlpool Corp. for instance, has been recalling workers since the first of the year. At its St. Paul plant, 430 have been called back since Jan. 1, and between 100 and 260 will be added to start production on the 1958 line of refrigerators. When production reaches its peak, more than two-thirds of all those laid off last year will have been recalled.

Here is a quick rundown on conditions in segments of the industry as reflected by the latest association statistics:

## BAROMETERS OF BUSINESS

| | LATEST PERIOD* | PRIOR WEEK | YEAR AGO |
|---|---|---|---|
| **INDUSTRY** | | | |
| Steel Ingot Production (1000 net tons)[2] | 1,293[1] | 1,270 | 2,226 |
| Electric Power Distributed (million kw-hr) | 11,000[1] | 11,107 | 11,310 |
| Bituminous Coal Output (1000 tons) | 7,050[1] | 6,960 | 10,182 |
| Crude Oil Production (daily avg—1000 bbl) | 6,250[1] | 6,251 | 9,537 |
| Construction Volume (*ENR*—millions) | $325.7 | $304.5 | $439.6 |
| Auto, Truck Output, U. S., Canada (*Ward's*) | 84,631[1] | 98,884 | 159,991 |
| **TRADE** | | | |
| Freight Carloadings (1000 cars) | 525[1] | 534 | 691 |
| Business Failures (Dun & Bradstreet) | 346 | 342 | 302 |
| Currency in Circulation (millions)[3] | $30,617 | $30,733 | $30,610 |
| Dept. Store Sales (changes from year ago)[3] | −9% | −16% | +13% |
| **FINANCE** | | | |
| Bank Clearings (Dun & Bradstreet, millions) | $25,437 | $24,260 | $20,961 |
| Federal Gross Debt (billions) | $275.3 | $272.2 | $274.4 |
| Bond Volume, NYSE (millions) | $30.7 | $30.4 | $23.4 |
| Stocks Sales, NYSE (thousands of shares) | 13,609 | 12,225 | 13,413 |
| Loans and Investments (billions)[4] | $92.7 | $89.8 | $87.3 |
| U. S. Govt. Obligations Held (billions)[4] | $30.2 | $28.1 | $26.3 |
| **PRICES** | | | |
| STEEL's Finished Steel Price Index[5] | 239.15 | 239.15 | 227.41 |
| STEEL's Nonferrous Metal Price Index[6] | 196.5 | 196.2 | 239.7 |
| All Commodities[7] | 119.4 | 119.5 | 117.3 |
| Commodities Other than Farm & Foods[7] | 125.7 | 125.7 | 125.4 |

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

# COST REDUCTION PROGRAM CALLS FOR COLD HEADING

## Hassall Re-Design Often Means Big Savings on Parts

The most important consideration we can point out to the designer or purchaser of fasteners and small parts is that any part which can be machined from rod stock is also potentially available from the cold heading manufacturer. This technique offers speed of production, without scrap loss, plus superior strength and appearance for low cost and high design efficiency.

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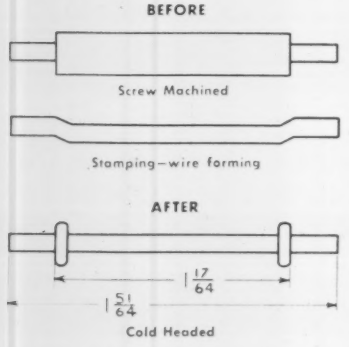
This spacer is typical of such a Hassall re-design. Note the customer's drawing . . . this is a stamping, not too accurate, with poor bearing surfaces and not too easy to handle in assembly.




Now, look at this spacer as redesigned for cold heading. Now, a double collar spacer which is very accurate, structurally much stronger, and with much better bearing surfaces. And lower in cost!

Given complete specifications, including a drawing and an idea of the application, we can quickly tell you whether or not it will be advantageous to have your part or fastener JOB-DESIGNED by HASSALL.

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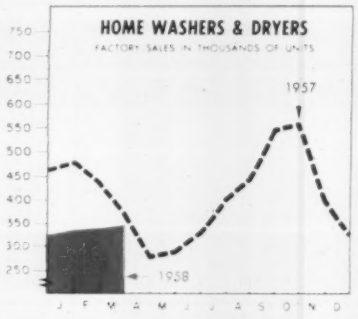
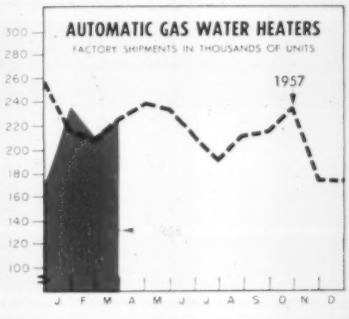
## THE BUSINESS TREND




| | Washers | | Dryers | |
|---|---|---|---|---|
| | 1958 | 1957 | 1958 | 1957 |
| Jan. | 238,153 | 331,314 | 98,630 | 144,621 |
| Feb. | 263,099 | 319,580 | 78,578 | 114,517 |
| Mar. | 278,891 | 286,265 | 70,309 | 83,668 |
| Apr. | ..... | 230,675 | ..... | 42,850 |
| May | ..... | 254,195 | ..... | 31,572 |
| June | ..... | 282,289 | ..... | 46,783 |
| July | ..... | 335,139 | ..... | 70,611 |
| Aug. | ..... | 329,646 | ..... | 116,601 |
| Sept. | ..... | 384,299 | ..... | 164,468 |
| Oct. | ..... | 369,487 | ..... | 185,772 |
| Nov. | ..... | 260,460 | ..... | 141,663 |
| Dec. | ..... | 206,787 | ..... | 118,116 |
| Totals | ..... | 3,589,476 | ..... | 1,260,642 |

American Home Laundry Mfrs. Assn.




| | Shipments—Units | | |
|---|---|---|---|
| | 1958 | 1957 | 1956 |
| Jan. | 237,100 | 214,900 | 239,000 |
| Feb. | 211,500* | 208,200 | 259,200 |
| Mar. | 228,100* | 226,600 | 267,500 |
| Apr. | ..... | 238,200 | 241,200 |
| May | ..... | 233,400 | 244,300 |
| June | ..... | 211,700 | 251,500 |
| July | ..... | 192,500 | 231,900 |
| Aug. | ..... | 210,300 | 243,500 |
| Sept. | ..... | 215,500 | 218,100 |
| Oct. | ..... | 234,700 | 224,700 |
| Nov. | ..... | 173,300 | 184,400 |
| Dec. | ..... | 172,700 | 156,800 |
| Totals | ..... | 2,532,000 | 2,762,100 |

*Preliminary.
Gas Appliance Mfrs. Assn.

Charts copyright, 1958, STEEL.

**Home Laundry Equipment**—Factory sales of all home laundry appliances during March amounted to 363,255 units, up 2 per cent from the February total. On the up side: All washers and automatic ironers (see table above). On the down side: Washer-dryers and electric and gas dryers (table above).

**Heating Equipment**—On the up side in March were industry shipments of gas-fired furnaces and gas-fired boilers. Gas conversion burners and oil-fired installations were on the down side in February.

**Ranges** — Factory shipments of gas ranges in January were up over 8 per cent. February shipments of electric ranges showed little change from those of January.

**Water Heaters**—Shipments of gas water heaters in March were 228,100 units, ahead of both the preceding month and the year-ago period. (See chart, above.) For the first quarter, this segment of the industry was 4.2 per cent above the year-ago level. Electric unit shipments for the first two months averaged 60,000, about on a par with the 1957 period.

**Refrigerators**—In February, factory sales were 21,700 units above the January pace.

**Vacuum Cleaners** — Sales in March totaled 291,418 units, 29 per cent above the February figure.

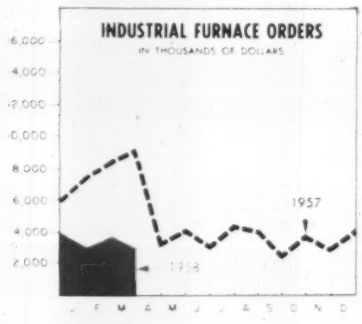
In most cases, the 1958 figures are still behind the year-ago totals. But Mr. Cordiner says that his company's orders in April indicate that the low point has been passed.

### PAs See More Orders

The April survey of the National Association of Purchasing Agents also brings some good news. New orders continued to improve, respondents say, although production has not yet responded. They also confirm STEEL's quarterly survey showing that inventories are still being reduced (see Page 125). During the past month, prices began to move downward in a fashion more normal to recession periods. The employment report leaves much to be desired, although there was some slight improvement from the March position.

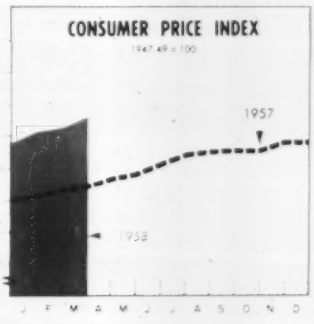
### Construction Still a Plus

Reports on volume of construction contracts in March are mixed, but they tend to uphold the view that this is still one of the plus factors in the economy. F. W. Dodge




| | 1958 | 1957 | 1956 |
|---|---|---|---|
| Jan. | 3,045 | 7,380 | 10,244 |
| Feb. | 3,684 | 8,373 | 12,163 |
| Mar. | 2,871 | 9,090 | 7,025 |
| Apr. | .... | 3,164 | 8,803 |
| May | .... | 3,994 | 3,667 |
| June | .... | 2,974 | 4,748 |
| July | .... | 4,332 | 4,140 |
| Aug. | .... | 3,924 | 6,722 |
| Sept. | .... | 2,337 | 3,057 |
| Oct. | .... | 3,621 | 8,741 |
| Nov. | .... | 2,832 | 3,986 |
| Dec. | .... | 3,992 | 5,858 |

*Not including new orders for steel mill furnaces.
Industrial Heating Equipment Assn. Inc.




| | 1958 | 1957 | 1956 |
|---|---|---|---|
| Jan. | 122.3 | 118.2 | 114.6 |
| Feb. | 122.6 | 118.7 | 114.6 |
| Mar. | 123.3 | 118.9 | 114.7 |
| Apr. | .... | 119.3 | 114.9 |
| May | .... | 119.6 | 115.4 |
| June | .... | 120.2 | 116.2 |
| July | .... | 120.8 | 117.0 |
| Aug. | .... | 121.0 | 116.8 |
| Sept. | .... | 121.1 | 117.1 |
| Oct. | .... | 121.1 | 117.7 |
| Nov. | .... | 121.6 | 117.8 |
| Dec. | .... | 121.6 | 118.0 |

U. S. Bureau of Labor Statistics.

Corp. says contracts for future construction totaled $2.7 billion in that month, down 12 per cent from the 1957 period but up seasonally $767.8 million from February's figure. *Engineering News-Record*'s tabulations show that heavy construction awards are holding well above the respectable $300-million weekly level. Dun & Bradstreet Inc. reports that building permit valuations for 217 cities came to $564 million, the highest March on record. It was 29.5 per cent above the February figure.

On the minus side: Bookings for fabricated structural steel in March totaled only 195,970 tons, down a whopping 39 per cent from the corresponding 1957 level. Shipments for current work came to 366,598 tons, indicating that at least for the present, there has been little if any cutback in heavy construction put in place.

## Trends Fore and Aft

• Any comparison of department store sales in recent weeks with year-ago figures is misleading because Easter was two weeks earlier than it was last year. Even though sales in the week ended Apr. 19 were 9 per cent below the year-ago mark, they compared favorably with 1957's post-Easter record.

• General Electric Co. is raising prices 3 per cent on products made by four departments of its turbine division.

• Beginning with the week ended Apr. 22, the Bureau of Labor Statistics is basing its weekly wholesale price index (see Barometers of Business, Page 69) on a revised weighting structure, reflecting 1954 value weights.

• New England companies should get about $1 billion of the $11 billion which the U. S. will spend on missile development during the next two years, says the New England Council.

• Ferrous castings shipments declined about 13 per cent in February, reports the Bureau of the Census. Gray iron, malleable iron, and steel foundries were down about equally percentagewise. Nonferrous founders saw their shipments drop 15 per cent from January's level.

• Orders for industrial furnaces fell to $2,871,000 in March, the low point of the year and the lowest since last November (see chart above). Producers expressed disappointment because they had expected the month to continue the improvement noted in February.

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Forging jet engine turbine discs in 20,000 pound hammer equipped with Heppenstall Die Blocks . . . Wyman Gordon Company, Worcester, Mass.

## with Heppenstall Hardtem Die Blocks you get forgings "just like the first one"

Tolerances are especially close for these jet engine turbine disc forgings. That's why they're forged in Heppenstall Hardtem Die Blocks. For this job, Wyman Gordon Company selected Hardtem "B" Blocks.

**Holding dimensions** for long runs is only one of the well known characteristics of Heppenstall Hardtem Die Blocks.

**Machinability** of Heppenstall Hardtem rates equally high with veteran die sinkers. When they lay out a design on Hardtem, they expect and *get* savings in cutting time, longer tool life, and a more accurate sinking.

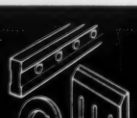
Forged on all six faces from special Heppenstall Steel, Hardtem and other Heppenstall Die Steels are manufactured in a wide range of hardnesses to match varying customer requirements of application and machinability. If you're looking for better die block performance, contact your Heppenstall Representative.

**These five Heppenstall Warehouses** carry stocks of the most popular size die blocks:

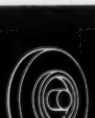
Bridgeport 5, Conn. • Detroit 32, Mich • Indianapolis 27, Ind. • Los Angeles 22, Calif. • Pittsburgh 1, Pa.

DIE BLOCKS

MATERIALS HANDLING EQUIPMENT

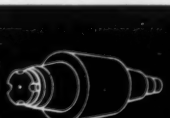


KNIVES



FORGINGS

RINGS



BACK-UP ROLL SLEEVES

**HEPPENSTALL**

*. . . the most dependable name in die blocks*

PITTSBURGH 1, PENNSYLVANIA

RAY R. EPPERT
*president of Burroughs*

J. D. MacKENZIE
*Asarco president*

HOWARD W. GRIESBACH
*Flexonics v. p.-operations*

MARC B. ROJTMAN
*J. I. Case president*

Ray R. Eppert was elected president, **Burroughs Corp.**, Detroit. Formerly executive vice president, he succeeds the late **John S. Coleman.**

**J. D. MacKenzie** was elected president, **American Smelting & Refining Co.**, New York. **R. W. Vaughan,** former president, was elected vice chairman. Mr. MacKenzie was vice president in charge of all smelting and refining operations. **R. L. Jourdan** was elected a vice president. He has been manager of the ore purchasing department since 1941.

**Harry T. Bauerle Jr.** was appointed sales manager of **Vidmar Inc.**, division of **Volkert Stamping Inc.**, Williamsport, Pa. The recently created Vidmar company manufactures high-quality metal storage equipment.

**General Steel Castings Corp.**, Granite City, Ill., elected **James MacDonald** executive vice president; **Richard T. Risk,** vice president-treasurer. **W. B. Reed** was made vice president in charge of the Eddystone and Avonmore, Pa., plants.

**Malcolm G. House** was made industrial relations manager of **Clark Equipment Co.'s** transmission division, Jackson, Mich.

**Graham B. Brown** was made director of marketing, **Mallory-Sharon Metals Corp.**, Niles, Ohio. He was was formerly vice president of Tube Reducing Corp., and before that was with Youngstown Sheet & Tube Co.

**Howard W. Griesbach** was appointed vice president-operations, **Flexonics Corp.**, Maywood, Ill. He was vice president of manufacturing, aircraft and bellows products.

**Charles M. Brinckerhoff** was elected president of **Anaconda Co.**, New York, and its Chilean subsidiaries. He succeeds **Clyde E. Weed,** who was elected chairman to succeed the late **Roy H. Glover.** Mr. Brinckerhoff was executive vice president of Chile Exploration Co. and Andes Copper Mining Co.

**Richard M. Stewart** was elected president, **American Brass Co.**, Waterbury, Conn., subsidiary of Anaconda Co. He succeeds **John A. Coe,** who was elected chairman, continuing as the company's chief executive officer. Mr. Stewart was director of industrial relations at Anaconda.

**William S. Morris** was elected president of **Alco Products Inc.**, Schenectady, N. Y. Former executive vice president, he succeeds **Perry T. Egbert,** now chairman.

**Kenneth M. Gleszer** was elected president, **Dixon Sintaloy Inc.**, Stamford, Conn., subsidiary of Joseph Dixon Crucible Co. He succeeds **Frank G. Atkinson** as president of the subsidiary. Mr. Atkinson is president of the parent firm.

**R. S. Bradshaw Jr.** was named president and general manager, **Texas Foundries Inc.**, Lufkin, Tex. He succeeds the late **Col. Cal C. Chambers.**

**Marc B. Rojtman,** formerly executive vice president, was elected president of **J. I. Case Co.**, Racine, Wis. He succeeds **John T. Brown,** who was re-elected chairman. Mr. Rojtman, formerly president of American Tractor Co., became associated with Case through the merger of these companies in January, 1957.

**Robert F. Reid** was made manager, machine tool sales, **Union Twist Drill Co.**, Athol, Mass. He has served as sales manager for both Reid Bros. Co. Inc., and Arter Grinding Machine Co. Inc.

**Henry Newhouse,** formerly assistant to the sales manager, was promoted to assistant sales manager, axle division, **Eaton Mfg. Co.**, Cleveland.

**Aluminum Co. of America,** Pittsburgh, elected as vice presidents: **N. R. Althauser,** controller; **F. J. Close,** general manager, sales development and commercial research divisions; **B. J. Fletcher,** general manager-engineering; **R. O. Keefer,** general purchasing agent.

**Robert G. Bamber** was named assistant secretary and assistant treasurer; **Edward J. Griffin,** assistant controller of the spring division of **Borg-Warner Corp.**, Chicago.

**W. E. Gutzwiller** was made assistant to the manager, electrical application department, **Allis-Chalmers Mfg. Co.**, Milwaukee. **T. H. Bloodworth** was made chief systems engineer. For the department's rectifier section, **D. B. Scott** was

HUGH J. PHILLIPS Jr.
*U. S. Steel exec. post*

WILSON BRADLEY Jr.
*Endevco v. p.*

HARRY L. LEYDA
*Dallas Tank president*

FRANK B. MITCHUM
*Atkins Saw p. a.*

made manager; **J. B. Rice**, chief design engineer; **Harold Winograd**, consulting engineer.

**Hugh J. Phillips Jr.** was appointed vice president-administration planning, **United States Steel Corp.**, Pittsburgh. He will assist the executive vice president-personnel services in organization planning, personnel and compensation, staff service activities, and over-all programs and policies.

**Edward M. Cullen** was named purchasing agent of **Handley Brown Heater Co.**, Jackson, Mich.

**Thomas C. Petty** was elected president, **Hauck Mfg. Co.**, Brooklyn, N. Y. **Mrs. M. E. C. Gerdes** was elected chairman; **William H. Oler**, vice president.

**G. W. Brown** was elected executive vice president, **Wagner Electric Corp.**, St. Louis. **Paul C. Ford** was made vice president-engineering and research; **R. H. Hackett**, vice president-manufacturing.

**Wilson Bradley Jr.** was appointed vice president-general manager, **Endevco Corp.**, Pasadena, Calif. In addition to duties as vice president, he remains active in design and development of new electronic components.

**Harry L. Leyda** was elected president, **Dallas Tank Co. Inc.**, Dallas. He formerly served as vice president and sales manager from 1945 to 1947. Most recently he was manager of steel plate sales at Lone Star Steel Co.

**Charles A. Haag** was appointed by **Ainsworth-Precision Castings Co.**, Detroit, to head its eastern division's production facilities. He is at Fayetteville, N. Y. He has been with Ainsworth-Precision and its predecessor firm, Precision Castings Co., for 33 years.

**Raymond F. Duffy** was named to the new post of vice president-sales, **Tubular Rivet & Stud Co.**, Quincy, Mass. He was general sales manager.

G. W. BROWN

PAUL C. FORD

R. H. HACKETT

*new officers for Wagner Electric*

**Frank B. Mitchum** was made purchasing agent, **Atkins Saw Div.**, Indianapolis, Borg-Warner Corp.

**Joseph C. Guptill** was made national product manager, reinforcing products division, **Joseph T. Ryerson & Son Inc.**, Chicago. He succeeds **Frank F. Trierweiler**, retired.

**Norman J. Johnson** was made manager of operations, **A. M. Byers Co.**, in charge of plants in Ambridge and South Side, Pittsburgh. He was formerly factory manager for Flannery Mfg. Co., and Fort Pitt Mfg. Co.

**James R. Craine** was promoted to branch manager, east central district, **Cooper-Bessemer Corp.** He is at Mt. Vernon, Ohio.

**Robert H. Bragg** was named supervisor of material control for **Hercules Motors Corp.**, Canton, Ohio.

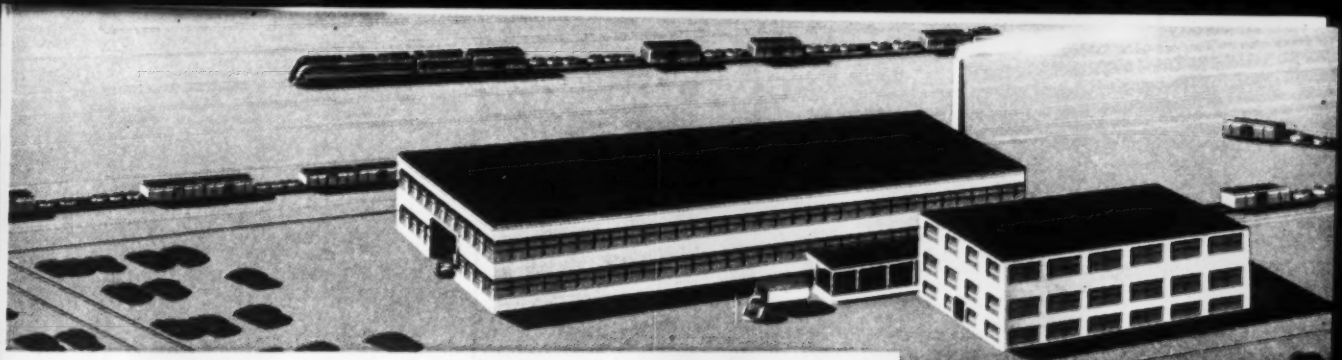
**John G. Khoury** was made Detroit district manager, **Sterling Grinding Wheel Co.**

**Saul S. Schiffman** was elected chairman, **Tenney Engineering Inc.**, Union, N. J. He continues as secretary-treasurer and chief financial officer of the company.

**Leonard Szczepanski** was made purchasing agent of the Chicago plant of **Inland Steel Container Co.**

**James E. Barnes**, Ann Arbor, Mich., was made sales engineer for indirect field sales by **Buhr Machine Tool Co.**

**Thomas M. Stuart** joined **Hallicrafters Co.**, Chicago, as sales pro-



# This is Illinois Gear

ABOVE:
South Works of the Illinois Gear & Machine Company, Chicago

BELOW:
Main Offices and Works of the Illinois Gear & Machine Company, Chicago

## manufacturer of quality gears

**Come to Illinois Gear** and view these plants fully manned with skilled craftsmen, under the most qualified supervisors. Here is achieved the unique combination of maximum production and precision quality control. One machine out of six . . . one man out of every ten . . . is devoted to quality control.

In these plants are produced the highest quality commercial gears . . . spur, bevel, helical, herringbone, worm and worm gears, etc. . . . ranging in size from eight gears per pound to 80,000 pounds per gear. Countenance no compromise with quality, get the utmost in service, specify and buy ILLINOIS GEARS.

***Look for this mark ILLG® . . . the symbol on finer gears***

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*Gears for Every Purpose* ... one gear or 10,000 or more

# ILLINOIS GEAR & MACHINE COMPANY

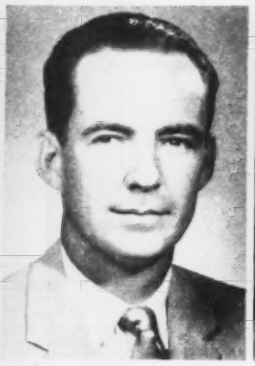
2108 NORTH NATCHEZ AVENUE • CHICAGO 35, ILLINOIS

M. W. TOWNSEND
*Handy & Harman adm. v. p.*

ROBERT J. CORMIER
*heads Miller & Van Winkle*

WILLIAM R. JULIUS Jr.
*McKinney Mfg. v. p.-sales*

L. KERMIT DOWLER
*Wheeling Steel dept. supt.*



G. V. PATTERSON
*Swartwout div. gen. mgr.*

FRANK J. FIELDS
*heads Fosdick Machine Tool*

motion manager of amateur equipment.

At **Wheeling Steel Corp's** Yorkville, Ohio, Works, **L. Kermit Dowler** was made superintendent of the cold strip department; **Paul J. Pettit Jr.**, assistant superintendent. Mr. Dowler succeeds **Owen K. Moynihan,** who assumed new responsibilities at the Steubenville, Ohio, Works.

**G. V. Patterson** was appointed general manager, ventilator division, **Swartwout Co.**, Cleveland. He served for the last six years as sales manager for Jenn-Air Products Co., Indianapolis.

**Glenn A. Stertzbach** was elected executive vice president, **George L. Day Co. Inc.**, Buffalo. **John B. King** and **Herbert K. Bahr** were elected vice presidents.

**Richard S. Ferguson** was appointed purchasing agent at **Flexonics Corp.**, Maywood, Ill., succeeding **K. H. Flory**, resigned.

**Frank J. Fields** was elected president, **Fosdick Machine Tool Co.**, Cincinnati. He was works manager. Prior to joining Fosdick in 1957, Mr. Fields was executive vice president and general manager, Sidney Machine Tool Co.

Olin Mathieson Chemical Corp. named **Carl R. Rowe** general plant manager of **Olin Aluminum Div.'s** new rolling mill, nearing completion between Clarington and Hannibal, Ohio. He succeeds **Harry E. Gude**, recently made vice president-manufacturing for the aluminum division. **Addison S. Farrell** succeeds Mr. Rowe as plant manager of the rolling mill.

**Arthur J. Rutherford** was appointed director of procurement of **Graflex Inc.**, Rochester, N. Y. He was assistant manager of procurement for Arma Div., American Bosch Arma Corp.

**Jerome A. Gottschalk** was appointed director of sales, **Christy Co.**, Fremont, Ohio. He was with American-Lincoln Corp.

**M. W. Townsend** was elected vice president for administration and finance of **Handy & Harman,** New York. He was assistant to the president.

**Robert J. Cormier** was elected president of **Miller & Van Winkle Co.,** Paterson, N. J. He was president and sales manager, Pattern Products Co.

**William R. Julius Jr.** was elected vice president-sales for **McKinney Mfg. Co.**, Pittsburgh. He was general sales manager.

**Charles W. Baker** was promoted to assistant general sales manager, **Chase Brass & Copper Co.**, subsidiary of Kennecott Copper Corp. He has been western regional manager and continues headquarters at the Chase office in Los Angeles, devoting his time to western and midwestern sales regions. Replacing Mr. Baker as western regional manager is **Allan R. Armstrong,** with headquarters in San Francisco. **Robert H. Chittim** succeeds Mr. Armstrong as staff manager-tube, and continues headquarters in Waterbury, Conn.

## *OBITUARIES...*

**W. L. Cook**, chairman, **Reliable Electric Co.**, Franklin Park, Ill., and **Whitney Blake Co.**, Hamden, Conn., died Apr. 26.

**Walter Ferris**, 90, vice president, **Oilgear Co.**, Milwaukee, died Apr. 16.

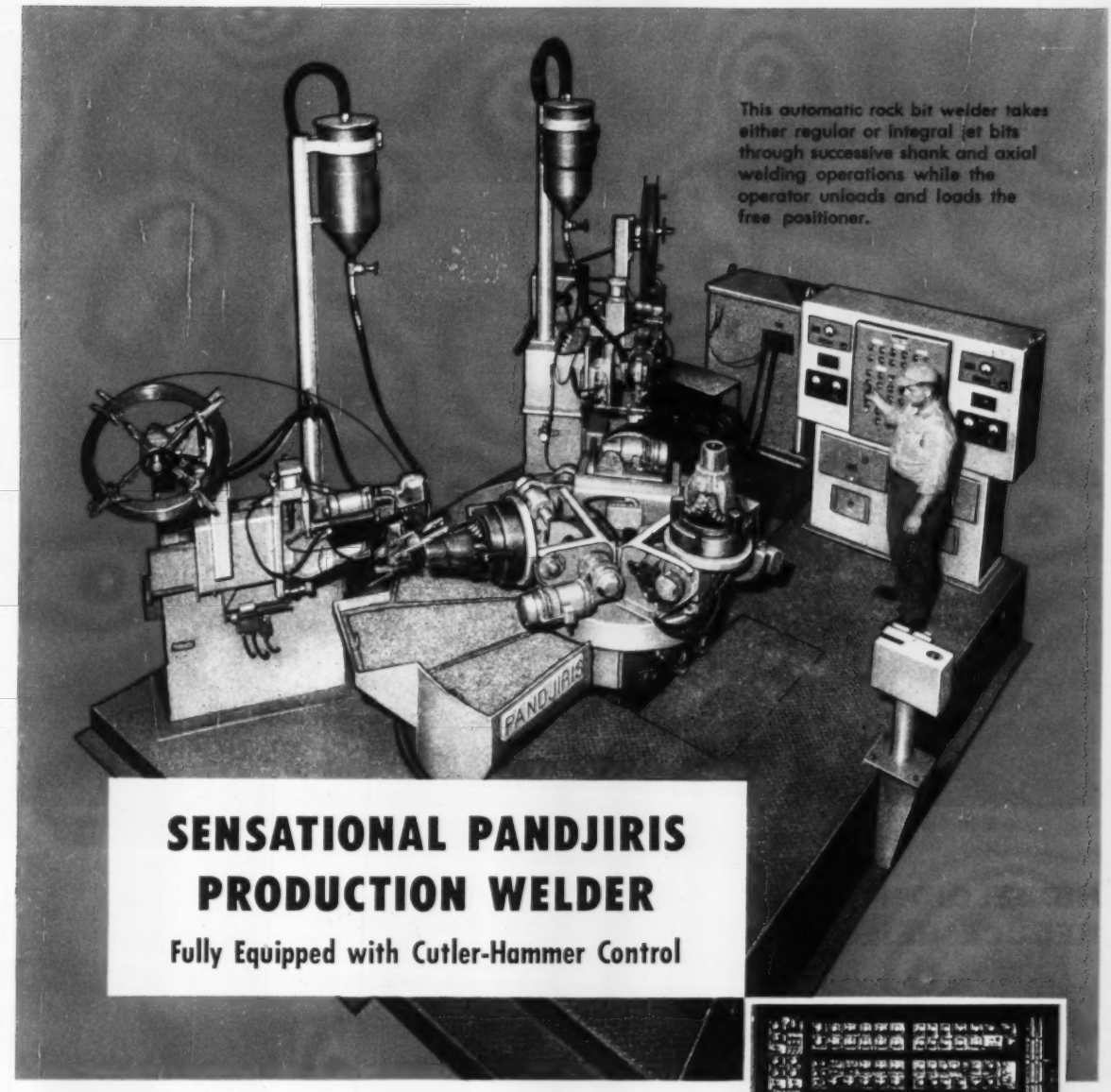
**Ralph L. Ostrander**, manager of labor relations, **Allegheny Ludlum Steel Corp.**, Pittsburgh, died Apr. 20.

**Dr. George V. Slottman**, 54, vice president of research and engineering, **Air Reduction Co. Inc.**, New York, died Apr. 21.

**W. A. Lintern**, treasurer, **Lintern Corp.**, Painesville, Ohio, died in Florida Apr. 25.

**William W. Armour**, president, **Armour-Porter Co.**, Worcester, Mass., died Apr. 14.

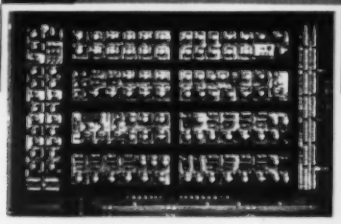
**Warwick W. Foster**, 67, a regional sales manager for **Pendleton Tool Industries Inc.**, Los Angeles, died Apr. 13.




This automatic rock bit welder takes either regular or integral jet bits through successive shank and axial welding operations while the operator unloads and loads the free positioner.

# SENSATIONAL PANDJIRIS PRODUCTION WELDER

## Fully Equipped with Cutler-Hammer Control



The electrical control cubicle contains all the Cutler-Hammer Three-Star Control components which control each machine motion.

Typical of the broad trend to automation and the advanced engineering which makes it possible is the new Pandjiris AUTO-WELD-MATON* transfer type production welder for the manufacture of rock bits. Typical of automation projects, its very heart is a complex system of electrical control equipment. And typical of the best in engineering, this control equipment is 100% Cutler-Hammer.

The Pandjiris Weldment Co., St. Louis, Missouri, has long been a leader in the design and manufacture of production welding equipment, positioners, turning rolls, weld-evators, head manipulators, etc., as well as the spectacular Pandjiris AUTO-WELD-MATONS custom engineered to specific mass production requirements. Dependable performance built the Pandjiris reputation and Cutler-Hammer is proud that Cutler-Hammer Three-Star Motor Control and Cutler-Hammer Heavy Duty Oil Tight Pushbuttons are furnished as standard original equipment on all Pandjiris machines. CUTLER-HAMMER Inc., 1211 St. Paul Avenue, Milwaukee 1, Wisconsin. *Associate:* Canadian Cutler-Hammer, Ltd., Toronto.

*AUTO-WELD-MATON is a Pandjiris Weldment Co. Trademark

CHOICE OF THE LEADERS

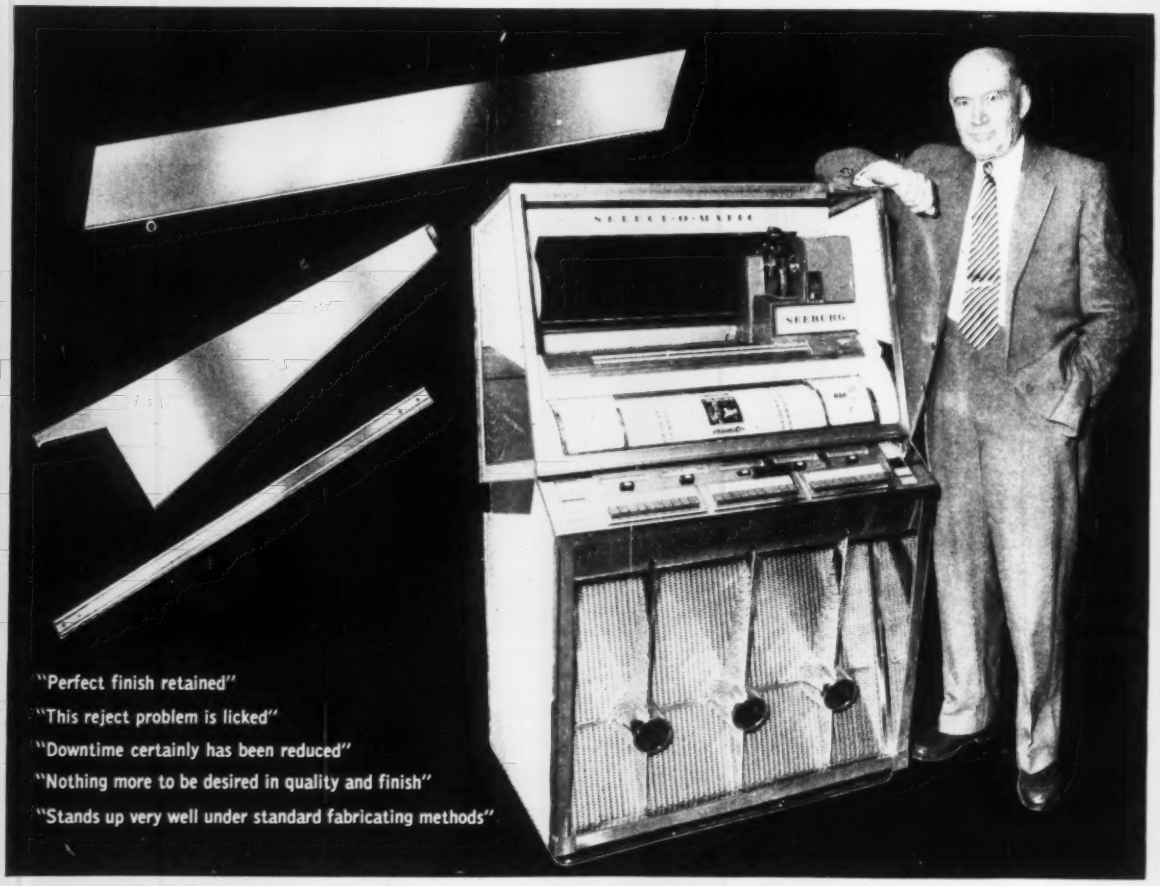
CUTLER-HAMMER

★ ★ ★

MOTOR CONTROL

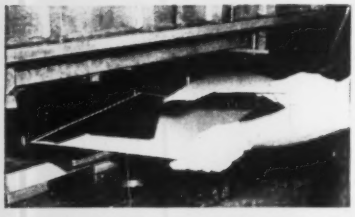
C-H

THE MARK OF BETTER MACHINES

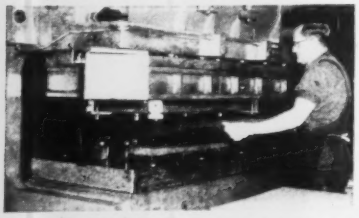

"Perfect finish retained"
"This reject problem is licked"
"Downtime certainly has been reduced"
"Nothing more to be desired in quality and finish"
"Stands up very well under standard fabricating methods"

K. R. Craft, Vice President, The Seeburg Corp., Chicago, with one of the company's famous juke boxes. The brilliant reflectivity and durability of Nickeloid pre-plated metals is an important factor in the product's eye-catching good looks.

# NICKELOID METALS SAVE 4 PRODUCTION STEPS— REDUCE REJECTS FOR THE SEEBURG CORPORATION



Standard fabricating methods are used to stamp and form juke box trim. Nickeloid Metals eliminate machinery tie-up; rejects are less than 1%.



Stamping Nickeloid chrome steel, protected with Mar-Not adhesive-backed paper which is easily peeled off. Finished part will need no polishing.

## *Pre-Finished Design Material is Easily Worked With Standard Fabricating Methods*

The Seeburg Corporation uses Nickeloid *pre-plated* chrome steel to achieve functional beauty and attention-value . . . economically. Before switching to Nickeloid, the company did its own cleaning, plating and buffing. The job required four — sometimes five more operations than are now necessary. According to Mr. Craft, "The tremendous cost of plating and buffing was not only more expensive and much more time consuming, but the finished product had to be inspected, and the rejections on plated and buffed metals was very much higher than it is with Nickeloid. Economically, the Nickeloid Metals have proved themselves in production."

Using standard fabricating methods, Nickeloid Metals need only be stamped and formed — then assembled. By capitalizing on this pre finished *method* of production, this leading manufacturer has eliminated the machinery formerly required for plating, polishing and buffing — saved four or five production steps, and is producing a better end product *with less manpower*. Can you use these advantages in *your* operation?

14 finish-to-base metal combinations — sheets, coils, strips.

WRITE TODAY FOR FREE LITERATURE

NICKELOID METALS SINCE 1898

**AMERICAN NICKELOID COMPANY**

PERU 1, ILLINOIS

# Steel Firm Expands

**Capacity to produce cold-rolled products is boosted 30 per cent at Granite City Steel Co.**

GRANITE CITY STEEL CO., Granite City, Ill., has completed one of the last and most important projects in its $33-million expansion program.

A four-stand tandem cold reduction mill and a temper or skin pass mill have been rebuilt, increasing the firm's capacity to produce cold-rolled steel products by about 30 per cent to a total of 750,000 tons a year. These include cold-rolled coils and sheets, electrical sheets, galvanized roofing and siding, galvanized sheets, tin plate, and tin mill black plate.

**Precise Controls**—Special features were incorporated in the rebuilt facilities. The cold mill has sensitive magnetic amplifiers which govern the controls that regulate the speeds of the work rolls in each of the four stands. An x-ray gage furnishes a constant measurement of the thickness of the strip which is rolled down to a minimum thickness of 0.0085 in.

Motors that drive the 56-in. temper mill were increased to 3200 hp. The mill was moved to a new building to tie its operation more closely with other finishing processes. Its control system also was improved by the installation of magnetic amplifier regulators.

## LeTourneau Broadens Line

R. G. LeTourneau Inc., Longview, Tex., re-entered the earthmoving equipment field May 1. The firm sold its earthmoving business to Westinghouse Air Brake Co. in 1953 for about $31 million and agreed to remain out of that field for five years.

## Plans Engineering Unit

Consolidated Western Steel Div., U. S. Steel Corp., Los Angeles, will build an engineering building at its Maywood plant, that city. The division's projects include design and development planning for nuclear missile and aerodynamic programs coupled with advance metallurgical studies on metals needed for space flight and nuclear applications.

## Plans To Build in Florida

Riverside Products Co. will build a $100,000 automatic screw machine products manufacturing plant on 30th Street W., Bradenton, Fla. Products will include brass, steel, and nylon fittings, ranging from small bearings to 5.5-in. tubing for large lift trucks.

## To Make Power Equipment

Jeta Metal Fabricators Inc., Yonkers, N. Y., formed a Power Equipment Div. to produce electric generating plants and related equipment. Howard C. Beyer is general manager of the new division.

## Expands Steel Warehouse

Hill-Chase Steel Co., Baltimore, built a 5000 sq ft addition to its warehouse in that city, bringing the firm's total available floor space to 75,000 sq ft. W. E. Hill is president.

## To Handle Valves, Fittings

Midcontinent Tube Service Inc., Evanston, Ill., organized an affiliated company, Midco Valves & Fittings Inc., to provide its pipe customers with necessary adjuncts to tubular steel products.

## Bliss Closes Press Plant

E. W. Bliss Co., Canton, Ohio, has suspended press manufacturing operations at its Toledo, Ohio, plant. All press building is consolidated in its plants at Canton, Ohio, and Hastings, Mich.

## Testing Reactor Planned

Industrial Testing Reactors Inc., Raleigh, N. C., will construct a privately owned nuclear testing reactor. The project will cost the newly organized firm about $12 million.

## Champion Motors Renamed

Champion Motors Co., Minneapolis, which recently sold its Outboard Motors Div., has changed its name to Airmotive Machining & Engineering Corp.

## Opens Eighth Pipe Mill

Page-Hersey Tubes Ltd., Toronto, Ont., officially opened its eighth pipe and tubing mill at Welland, Ont., with the start of production at a $5 million electric resistance weld steel pipe mill. The new mill produces pipe from 2⅜ in. to 8⅝ in. OD and has an annual capacity of 120,000 tons. The firm's total annual capacity is about 535,000 tons of steel pipe and tubing.

## Industrial Cranes

Borg-Warner Corp.'s Ingersoll Products Div. renamed its Industrial Crane & Hoist operation Borg-Warner Industrial Cranes. The general offices and main plant of Industrial Cranes are in Chicago at 1536 S. Paulina St. and are supplemented by additional facilities at 1000 W. 120th St. Industrial Cranes is expanding the scope of its operations to include a more complete line of related material handling equipment.

## Westinghouse To Build

Westinghouse Electric Corp., Pittsburgh, is building a manufacturing and repair division plant and an adjoining office building at Glassport, Pa. The plant will contain 62,600 sq ft of floor space. R. L. Bogardus will be manager.

## Buys Interest in Cochrane

General Waterworks Corp. purchased one-third of the outstanding common stock of Cochrane Corp., manufacturer of equipment for the treatment of industrial water supplies. Main offices of both companies are in Philadelphia. Cochrane, through its Metal Products Div., Pottstown, Pa., also fabricates a wide variety of heavy carbon steel and alloy products.

## Offers New Gear Service

A new production facility designed to meet the need for accurate and ultraprecision gears in low and moderate production quantities has been established by National Broach & Machine Co., Detroit. Main emphasis will be placed on production of gears for engineering development and prototype work for

the metalworking industries, as well as for research laboratories and universities doing special contract research work. The type of work planned for the facility can result in solutions of difficult gear production processing problems which can be passed on to jobbers for production runs.

## ASSOCIATIONS

**Metal Powder Industries Federation** (MPI) has been organized to succeed the Metal Powder Association. MPI includes four trade associations and a newly created American Powder Metallurgy Institute. Officers of the federation are: President, Dr. G. A. Roberts, Vanadium-Alloys Steel Co., Latrobe, Pa.; executive secretary, Kempton H. Roll who will also serve as administrative secretary of each of the five divisions. Presidents of the member associations who will serve also as vice presidents of the federation are: Metal Powder Producers Association, E. H. Klein, New Jersey Zinc Co., New York; Metal Powder Core Association, D. L. Almquist, Stackpole Carbon Co., St. Marys, Pa.; and Ferrite Manufacturers Association, C. L. Snyder, General Ceramics Corp., Keasbey, N. J. Selected as chairman of the American Powder Metallurgy Institute and vice president of the federation is R. C. Burgess, Burgess-Norton Mfg. Co., Geneva, Ill.

**American Welding Society**, New York, elected G. O. Hoglund, Aluminum Co. of America, Pittsburgh, president. Named vice president is C. I. MacGuffie, General Electric Co., Schenectady, N. Y.

**American Supply & Machinery Manufacturers' Association**, Cleveland, elected these officers, effective June 1: President, Lyman H. Bellows; first vice president, Fred C. Emerson; second vice president, Samuel D. Conant; secretary, Clare Payne; and treasurer, Paul A. Johnson Jr.

Joseph D. Lykins, Wheeling Steel Corp., was elected president of the **American Society of Lubrication Engineers**, Chicago.

## NEW ADDRESSES

**Morgan Construction Co.**, Worcester, Mass., moved its Pittsburgh office to 300 Cedar Blvd.

**Hardie Mfg. Co.** moved from Hudson, Mich., to Wilkes-Barre, Pa.

**Atlas Copco Eastern Inc.** moved its executive headquarters and northeast district offices from Paterson, N. J., to 610 Industrial Ave., Paramus, N. J.

Head offices of **Mannesmann International Ltd.** have been moved to 680 Fifth Ave., New York. Mannesmann International, headed by Dr. Gerhard Wagner, is the holding company of all Mannesmann enterprises in the U. S. and Canada, including Mannesmann Tube Co. at Sault Ste. Marie, Ont.

**Harris-Intertype Corp.** moved its general offices to the Illuminating Bldg., 55 Public Square, Cleveland 13, Ohio.

**Continental-Diamond Fibre Corp.**, Newark, Del., moved its St. Louis sales office to 1246 Hampton Ave., St. Louis 10, Mo. The firm is a subsidiary of Budd Co., Philadelphia.

## CONSOLIDATIONS

**General Fireproofing Co.**, Youngstown, completed purchase of **Otis Steel Products Corp.**, Ellicottville, N. Y., maker of movable steel office partitions.

**Universal Marion Corp.**, Washington, purchased **Scullin Steel Co.**, St. Louis.

**Dow Chemical Co.**, Midland, Mich., acquired **Extruders Inc.**, Hawthorne, Calif., and will operate the property as a subsidiary. The west coast firm supplies polyethylene film.

**Polymer Corp.**, Reading, Pa., purchased **Halex Corp.**, Detroit, maker of pressed and sintered nylon powders.

**MacDermid Western Inc.**, Ferndale, Mich., a wholly owned subsidiary of **MacDermid Inc.**, Waterbury, Conn., has been absorbed by the parent company. The firm makes metal cleaning, plating, and finishing chemicals.

**Hooker Electrochemical Co.**, Niagara Falls, N. Y., will merge with **Shea Chemical Corp.**, New York, subject to approval of stockholders on May 28. The consolidated firm will be known as Hooker Chemical Corp.

## NEW PLANTS

**Associated Piping & Engineering Co.** will open its Southern Div. plant at Gulfport, Miss., about June 1. Paul Keibler is manager. The plant will produce prefabricated pressure pipe assemblies.

A new molten salt pickling plant has been put into operation at **International Nickel Co. Inc.'s** Huntington, W. Va., Works. The unit provides an effective method of removing oxide scale from Inco's high nickel-chromium alloy tubes, rods, shapes, wire, and strip prior to further processing. The unit was built as an addition to the cold drawing department at a cost of $1.1 million.

**Chromium Corp. of America**, New York, opened a chromium plating plant at 8701 Union Ave., Cleveland. The operation specializes in the plating with chromium of cylinder liners for diesel oil engines, together with marine, pipeline, transport, and other industries utilizing diesel power.

**Perth Metal Industries Ltd.**, Stratford, Ont., is constructing a 10,000 sq ft plant to manufacture self-lubricating bearings under license from Chrysler Corp., Detroit. The firm will also make cored and solid bar stock and powder metal machine parts.

**Sutorbilt Corp.** has consolidated office and sales facilities with manufacturing equipment in a newly expanded $1.5 million plant at 2966 E. Victoria St., Compton, Calif. The firm makes positive pressure blowers, vacuum pumps, and vapor compressors. The parent company is Fuller Co., Catasauqua, Pa.

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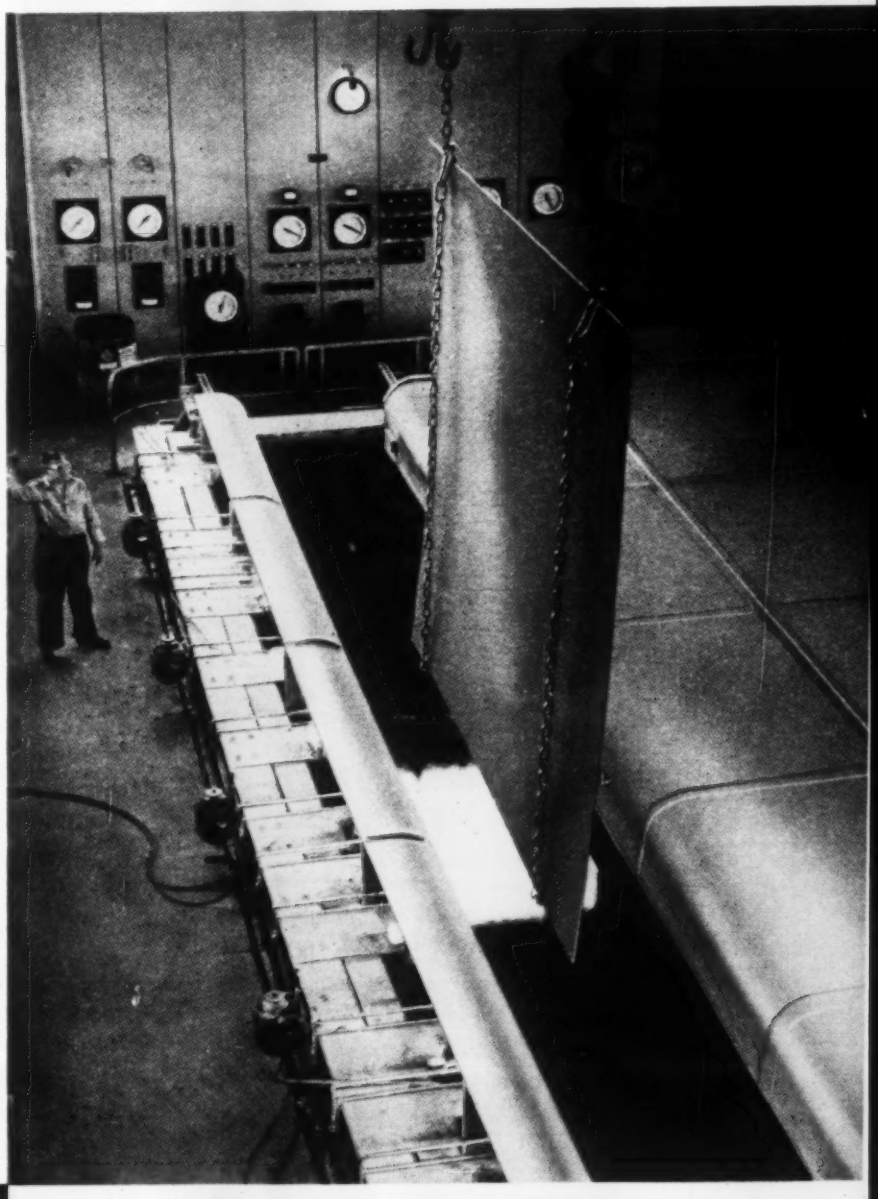

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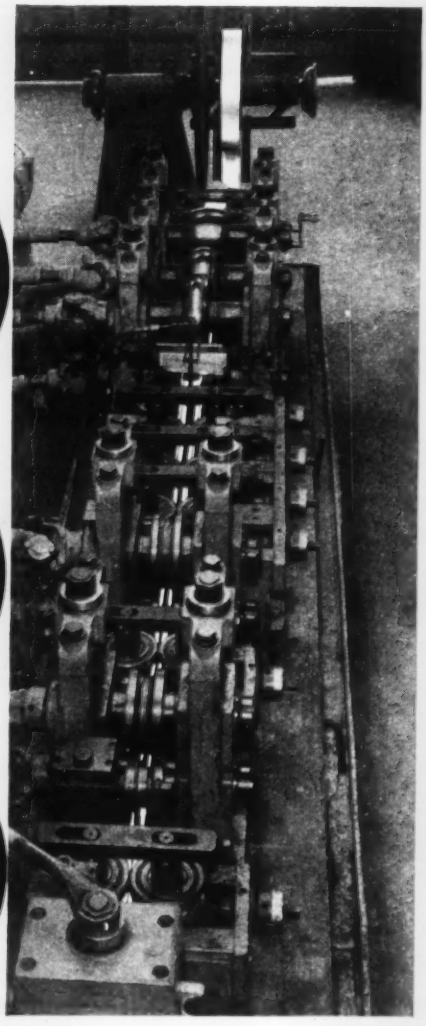
PIPE & TUBING



# Warehouse Stocks Backed By Production Capacity

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# Technical Outlook

**TOMORROW'S POWER SOURCES—** Instead of motor generator, battery, or radioactive source, you may have to get used to terms like "oscillating electromagnetic generator, thermopile generator, ion exchange membrane, fuel cell, photovoltaic battery." That's the conclusion Air Force sponsored investigators reached at Oklahoma A&M College. They list such devices as "unconventional power sources (for tomorrow) which appear most promising."

**SLOW QUENCH—** Slower than water and faster than oil in its ability to remove heat, a polyvinyl alcohol solution developed by International Harvester is being looked on as a quenching milestone. A polyvinyl alcohol quench costs about one-tenth as much as oil, is nontoxic, will not flame, and does not have to be washed off.

**SALT REFINING—** Some metals dissolve readily in their fused salts (alkali metals, alkaline earths, bismuth, cadmium, rare earths). Stanford Research Institute, Menlo Park, Calif., is using this property to purify nickel contaminated with cobalt. The material is dissolved in nearly molten nickel chloride (1850 F). On cooling, the nickel crystallizes out in almost pure state.

**BACTERIA EXTRACT METALS—** Kennecott Copper Corp. is breeding metal loving bacteria to help extract metal that is lost as waste. Conventionally, waste water from copper mines has been percolated and repercolated through ore waste dumps to leach out the copper. When bacteria are innoculated into the ferric sulfate-sulfuric acid leaching agent, the amount of copper recovered increases substantially, says Kennecott.

**CERMET FUTURES—** Investigators of high temperature cermets will do better to concentrate on refractories which resist oxidation and are chemically stable, thinks Dr. Alan Searcy, Mineral Technology Division, University of California. He says that the high melting silicides are the most promising and points to molybdenum disilicide as a leading contender: High temperatures form a protective surface of almost pure silica glass. The platinum series are still in the running as bonding metals, but he puts forth little hope of finding a stable combination.

**OXYGEN UNATTENDED—** The Linde Co. oxygen plant at U. S. Steel's South Works, South Chicago, Ill., is designed for unattended operation. The plant automatically produces oxygen at the rate required by the mill and keeps storage tanks for peak operations and standby filled. It is backed by a network of other on-site Linde plants in the area and Linde's large liquid oxygen producing facility at East Chicago, Ind.

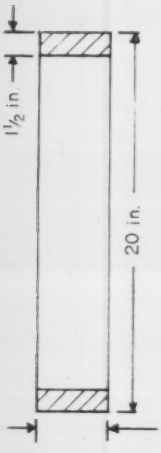
**TITANIUM SPREADS—** Rem-Cru A-55 titanium is available in expanded metal form. One use: Packing for chemical absorption and distillation towers. Penn Metal Co. Inc., Parkersburg, W. Va., can supply it.

**MELTING NEWS—** A process classified as "secret" by the government is reputed to be able to produce alloys of refractory metals on a continuous basis at one-fourth the cost of the best present methods. Alscope Explorations Ltd., a Canadian firm with offices in Passaic, N. J., holds the patents.

**ALUMINUM ENGINES—** Hi-si, an aluminum casting alloy containing more than 20 per cent silicon, is proposed by Alcoa for engine blocks. The hard material (140 Brinell) is machinable with modern tools. Machined surfaces are characterized by hard silicon islands separated by oil-holding aluminum pockets.

**PUSH SELENIUM, TELLURIUM—** Battelle Memorial Institute, Columbus, Ohio, is probing for new uses of the metals. Backed by eight leading selenium and tellurium producers, researchers expect to turn up applications in metals, organic chemicals, electrochemical solutions, and semiconductors.

Higher Cutting Speeds . . .




SAVE $1.70 a PART

**The job:** Rough turn the outside and inside diameters of this forged steel ring. About ½ in. of stock must come off both surfaces. It takes one pass. It used to take two. The work is being done at Leighton Machine Co., Manchester, N. H.

**OLD METHOD**

Cutter: High Speed Steel
Speed: 515 surface feet per minute
Feed: 0.005 inch per revolution
Time: 20 minutes

**NEW METHOD**

Cutter: Carbide
Speed: 2500 surface feet per minute
Feed: 0.015 inch per revolution
Time: 3 minutes

COST CRISIS . . . How To Beat It

# Boost Your Machining Speeds

**Faster cutting can help you beat the cost crisis. That's the advice of cutting experts. Their premise: Machines and tools can produce more than most production men think**

PRODUCTION men who strive for long tool life often underuse the capacity of their machines and inadvertently add to the cost of their operation.

The secret of economical tool life (and machine operation) lies between two extremes: Shooting for longevity alone has been likened to running a $50,000 machine to baby a $10 cutter. Neither can you run a machine at top speeds for all cuts.

A practical answer is to find the tool life that will give you the lowest cost per piece.

The approach is being used at General Electric's DC Motor & Generator Dept., Erie, Pa. It saved more than $100,000 in production costs last year through better speeds and wider use of throwaway cutters (STEEL, Mar. 10, p. 144).

**Why?** — The move to higher speeds pays off in at least two ways. First, and most obvious, it takes less time to get the metal off. Second, chances are you'll get a better cut and, normally, a better surface finish.

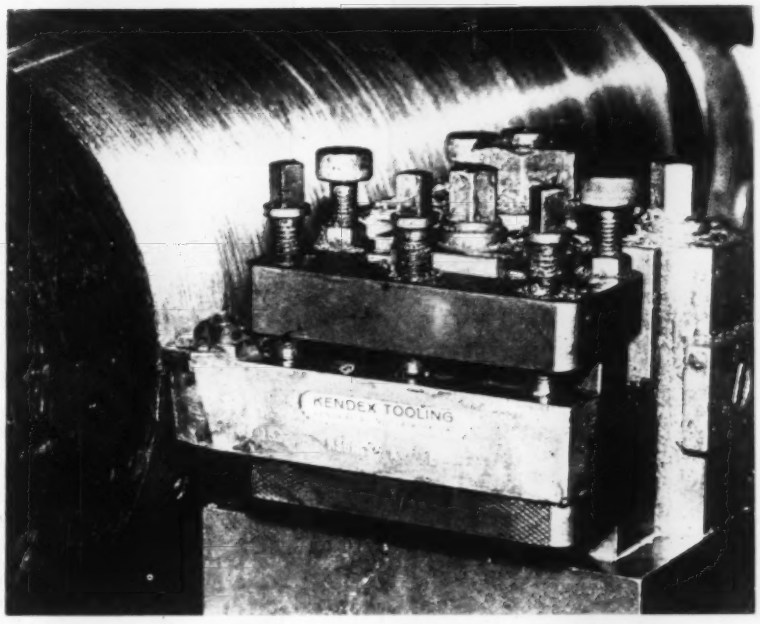
Leighton Machine Co., Manchester, N. H., is machining rings from forged, low carbon steel. (See exhibit.) Leon H. Rice Jr. says the rough turning job, removing about ½ in. of stock from the outside and inside diameters, used to take two passes on each diameter at relatively low speeds and feeds. When Leighton put the job on a new Jones & Lamson 9A-4½ turret lathe, it switched from HSS to carbide and boosted the speed nearly five times. The company is getting a better surface finish than it did before, and it takes only one pass.

Higher speeds can, in effect, add to your capacity. Or they make it possible for you to use fewer machines to get the same amount of work. At Arter Grinding Machine Co., Worcester, Mass., production men refigured all their cutting speeds on a line of lathes. Many were boosted. Seven machines are now doing the work that formerly required 17.

Engineers at Ford Motor Co.'s Dearborn, Mich., plant put in new machines with higher speed capabilities and got a 400 per cent increase in output. Capital tied up in assets for the job is about one-sixth what it was. A 250 per cent improvement in surface finish is also reported.

**Cleaner Cut**—Improved surface finish is the ace-in-the-hole for real cost cutting. It may give you that required finish without the extra pass. More important, it may give it to you without subsequent grinding.

The tool does a more efficient job of cutting. At low speeds, the




**Throwaway cutters give a 125 to 150 microinch finish on this scaly, hot-rolled steel pipe. Brazed tools used to give only 600 to 800. With the new cutters, speed was boosted to 744 sfpm, double the old rate**

metal ahead of the tool is crowded, then torn away. At high speeds, the metal separates in a more nearly true form of shear. Forces on the tool tip may decrease as speeds go up, say some authorities.

**Test Data**—Researchers at GE's Metallurgical Products Dept., Detroit, spend a lot of time learning the gains and the losses that go with an increase in cutting speed. They recently ran a cost study comparing high speed turning to grinding on one job. Here's what they report.

The test was run on a several-year-old Monarch lathe. An older machine was deliberately selected so conditions found in most plants could be duplicated. Cost studies pointed up the relative efficiency of getting a 10 to 15 microinch finish with grinding and with high-speed turning, using GE's 0-30 cemented oxide (ceramic) cutting tool. Speed was 800 sfpm; feed was 0.005 in. per revolution.

Here's what their cost breakdown showed: Grinding—17.3 minutes per piece, $2 machine cost per piece, $2.72 total cost per piece. Turning—8.1 minutes per piece, 0.62 cent machine cost per piece, $1.64 total cost per piece.

Turning will not replace grinding as a machining method. Grinding has much finer capabilities when it comes to close-tolerance sizing and high grade finishing. But you may be grinding parts with size and finish tolerances that are within the range of good single-point machining practice.

**Throwaways**—Generally, at low cutting speeds you'll need positive rake cutters to keep cutting forces down. As speeds go up, the cutting forces actually drop, and tool angles are less critical. You may be able to make the switch from brazed or solid tools to throwaways and open up a new area for cost reduction—no tool grinding, shorter setup time.

**Example**—One job at Globe Hoist Co., Philadelphia, involves the turning of hot-rolled steel pipe that's 7½ in. in diameter. The firm is now using Kendex cutter inserts made by Kennametal Inc., Latrobe, Pa.

Machining speed was more than doubled (to 744 sfpm), and feed was cut about 25 per cent on both roughing and finishing cuts. Globe Hoist used to get a 600 to 800 microinch finish; it now gets 125 to 150. Tool cost dropped from 96.3 to 23.6 cents per piece.

**Requirements**—What does it take to boost cutting speeds to, say, over 650 sfpm on steel? Primarily, you'll need rigidity in the workpiece, the machine, and the cutting tools. Feeds ought to be positive with little play in the gear train—the same goes for spindle speeds.

Many machines in use are rugged enough for these speeds. The most common barrier to higher speeds is the operator or the supervisor who is used to thinking in terms of 100 or 300 sfpm and fears the consequences of cutting faster.

On all but the most difficult alloys, you will probably be rewarded with gains in efficiency.

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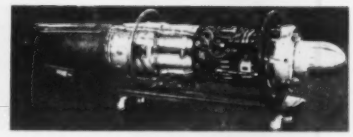
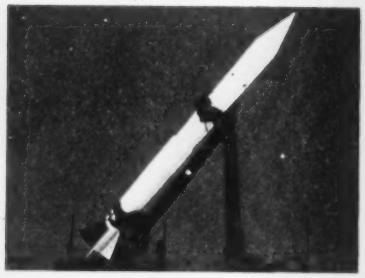
## COST CRISIS COMPETITION

This article is part of a campaign to help industry achieve lower unit production costs. The accompanying example and others to follow are samples of what the editors of STEEL are looking for in their nation-wide search for companies that have brought about important cost savings through more efficient use of capital equipment. Does your company qualify? If so, enter the Cost Crisis Competition. Write to the Cost Crisis Editor, STEEL, Penton Bldg., Cleveland 13, Ohio, for your awards kit.

AIRFRAMES



JET ENGINES



MISSILES

# Preview of Space Age Metals

WHAT materials will be used in tomorrow's airframes, engines, and missiles?

You can get a good idea from the tables below. The information comes from a survey of 31 airframe, engine, missile, and machine tool companies. Curtiss-Wright Corp. made the study for the Manufacturing Methods Branch, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio.

Here are the applications, the metals now being used, and those being proposed as replacements.

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## Major Airframe Components and Their Alloys

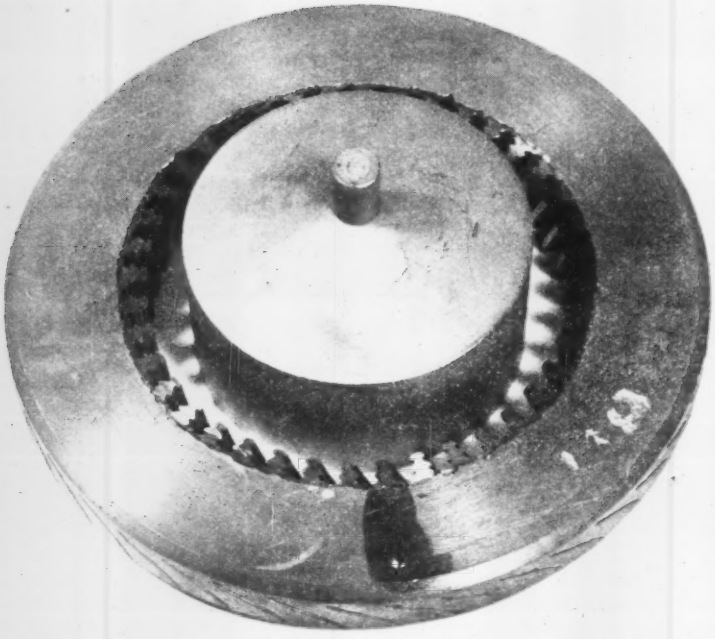
| COMPONENT | METALS NOW USED | PROPOSED |
|---|---|---|
| **FUSELAGE** | | |
| Structural Members, Frames, Spars, Longerons | Aluminum (75%), 4130 (40 Rc), Ti 6Al-4V, hot work die steels (55 Rc), 8740 (40 Rc) | 4340 (50 Rc), hot work die steels (55 Rc), Ti 6Al-4V |
| Skins—Panels | Aluminum, Al honeycomb, 301, 316, 321, 410, 17-7PH, 19-9 DL | 17-4 Mo, 17-7 PH, brazed stainless honeycomb, 410 |
| Attach Fittings | 303, 321, 4130 (40 Rc), 4140 (40 Rc), 4340 (40 Rc), 8630 (40 Rc), hot work die steels (50 Rc) | A-286, Inconel X, 4340 (55 Rc), hot work die steels (55 Rc), AM 350, AM 355, 12 MoV |
| **WINGS** | | |
| Skins (Sculptured) | Aluminum (80%), 301, 321, 17-7 PH, com. pure Ti | Brazed stainless honeycomb envelopes, 410, 17-4 Mo, 17-7 PH, hot work die steels, 321 |
| Structural Members | Aluminum (75%), 17-4 Mo, 17-7 PH | 17-4 Mo, 17-7 PH, AM 350, AM 355, hot work die steels (55 Rc) |
| Attach Fittings | 4140 (40 Rc), 4340 (40 Rc), Ti 6Al-4V, hot work die steels (55 Rc) | Hot work die steels (55 Rc), A-286, 15-7 Mo, 17-4 Mo, 17-7 PH, 12 MoV |
| **LANDING GEAR** | | |
| Frames, Rods | 4340 (40 Rc), 8630 (40 Rc), 4340 (50 Rc), hot work die steels (55 Rc) | 4340 (55 Rc), hot work die steels (55 Rc) |
| Fittings, Brackets | 4340 (40 Rc), A-286, 410, HS-21 | 15-7 Mo, A-286, 410 |
| Hydraulic Pumps | 4340 (40 Rc), 410, 440 | 410, hot work die steels (55 Rc) |
| **ENGINE MOUNTS** | 4340 (40 Rc), 410, A-286 | A-286, 410, hot work die steels (55 Rc) |
| **EMPENNAGE** | | |
| Skins | Aluminum (80%), 301, 321, 410, com. pure Ti | 410, 17-4 Mo, 17-7 PH, 19-9 DL, Inconel X, Ti 6Al-4V, hot work die steels (55 Rc) |
| Structural Members | Aluminum, 4340 (40 Rc), 8740 (40 Rc), 17-7 PH | 17-4 Mo, 17-7 PH, 4340 (55 Rc), AM-355, hot work die steels (55 Rc) |
| Attach Fittings | 4140 (40 Rc), 4340 (40 Rc), 17-7 PH, AM 350, hot work die steels (55 Rc) | 17-7 PH, AM 350, 4340 (55 Rc), hot work die steels (55 Rc) |

## Major Jet Engine Components and Their Alloys

| COMPONENT | METALS NOW USED | PROPOSED |
|---|---|---|
| Forward Frame, Gear Boxes | 1722 AV, Chromalloy, mag-thorium, 8740 | 17-7 PH, Ti 7Al-4Mo, Ti 6Al-4V |
| Hubs, Shafts | 4340, Ti 6Al-4V, AMS 6302, AMS 6304 | A-286, 410, 431 |
| Compressor Discs | AMS 6302, AMS 6304, 410, 422, 431, 17-7 PH, Ti 6Al-4V, 4340 (32 Rc) | 1722 A, 410, 431, 17-7 PH, 19-9 DL, AM-350, A-286, Ti 6Al-4V, Ti 7Al-3Mo |
| Compressor Rotor Blades | 410, 431, 17-7 PH | 403, 17-7 PH, 19-9 DL, AM-350, A-286 |
| Compressor Stator Blades | 410, 17-7 PH | 403, 17-7 PH, 15-7 Mo, AM-350 |
| Spacers | Ti 6Al-4V, 4340, A-286, 316 | Inconel X, A-286, Vasco Jet 1000 |
| Compressor Housing | 310, 321, Chromalloy, mag-thorium | A110-AT, A-286 |
| Center Main Bearing Support | 310, A-286 | A-286, R-235 |
| Combustion Chamber, Manifold Shrouds | 310, N-155, A-286, Hastelloy B | R-235, HS-25, Rene 41 |
| Turbine Inlet Nozzle | Hastelloy B | R-235 |
| Turbine Wheel | A-286, Discaloy, AMS 5616 | A-286, M-308, Inconel 901, Waspaloy, D-979 |
| Turbine Shaft | A-286, 4340 | A-286, Inconel 901, M-308, W545 |
| Turbine Rotor Blades | HS-31, M-252, U-500, A-286 | U-500, Inconel 700, Inconel 713, GMR-235, GMR-235D, HS-31, R-235, coated moly |
| Turbine Stator Blades | A-286, HS-25, Hastelloy C, Refractaloy 80 | Rene 41, Inconel 713, Inconel 700 |
| Turbine Stator Case | A-286, N-155 | R-235, Rene 41 |
| Reheat Burner | HS-25, N-155, 17-7 PH | Rene 41, Inconel 702 |
| Rear Main Bearing Support | A-286 | Inconel X, Inconel W |

## Major Missile Components and Their Alloys

| COMPONENT | METALS NOW USED | PROPOSED |
|---|---|---|
| Nose Cone | 303, 321, 17-7 PH | A-286, beryllium, molybdenum |
| Skin | Aluminum, 17-7 PH, 17-4 Mo, 302, 321, com. pure Ti | 17-4 Mo, 17-7 PH, A-286, AM-350, AM-355, Rene 41 |
| Structural Members | Aluminum, 4340, 17-4 Mo, 17-7 PH, Ti 6Al-4V | 15-7 Mo, 17-4 Mo, 17-7 PH, A-286, 12 MoV, hot work die steels (55 Rc) |
| Rings, Attach Fittings | 4340 (50 Rc), 4330 (50 Rc), 410, 17-4 Mo, 17-7 PH, 19-9 DL, Ti 6Al-4V | A-286, J-1570, M-252, R-235, Ti 6Al-4V, Ti C110 M, Ti 16V-2-1/2-Al, Ti B120 VCa |
| Pressure Tanks | 4330, 4130, 4140 (50 Rc) | Hot work die steels (55 Rc) |
| Fuel Controls | Aluminum, magnesium, A-286 | U-500, N-155, M-252, A-286, HS-25, S-816 |
| Fuel Control Housing | Aluminum, 301, 321, 347 | A-286, Rene 41, R-235 |
| Combustion Chamber | 17-7 PH, AM-350, AM-355 | A-286, R-235, Rene 41, J-1570, M-252, Inconel 901, Inconel X |
| Tail Cone Assembly | 17-7 PH, 19-9 DL, AM-350, AM-355 | AM-350, AM-355, N-155, A-286, U-500, M-252, Inconel X |



Turbine blades are positioned and the airfoil sections sealed in a Kirksite ring. The assembled ring is put in a holding cavity in a press die and held by the top die. The hot billet, placed in the center of the ring, extrudes under and around the blade roots. Only minor machining is needed to remove excess metal from the wheel face. Photo at right shows the billet, the extruded wheel, and the wheel after the Kirksite has been melted away

# Extrusion Slashes Wheel Assembly Costs

**Tailored for building turbine wheels, the process bids fair to solve other problem jobs. One benefit: The need for close precision on blade root forms is eliminated**

HOT EXTRUSIONS may be the answer to making low cost turbine rotors.

Ford Motor Co.'s engineering research group, in co-operation with Steel Improvement & Forge Co., Cleveland, has developed an inexpensive method of producing turbine and compressor rotors by extruding the wheel around the blade roots on a 30,000-ton forging press.

The process was developed by Ford engineer Lester I. Webb. Steel Improvement has been granted a production license. James J. Russ, technical director of the Cleveland firm, says it is negotiating production contracts now; it hopes to start on one run within a few months.

**Potential**—The high cost of producing rotors to withstand high temperatures has been a major stumbling block in the development of a practical gas turbine engine for autos. Mr. Webb's process may bring it closer to reality.

Right now, it can be used to turn out rotors for liquid propellent missile engines, for jet engines, small starting motors, and marine turbines. Messrs. Russ and Webb think the method also can be adapted for gear manufacturing.

**New Vs. Old Method**—Present methods of making turbine rotors usually include close tolerance broaching of both blade roots and blade root cavities. The extrusion process obviates such precision.

Blade roots can be used as cast or forged with no dimensional accuracy needed as long as stress requirements are maintained. "This does away with the time and money needed to keep the proper dimensions between the blade air foils and roots which are necessary in

broaching or casting," says Mr. Webb.

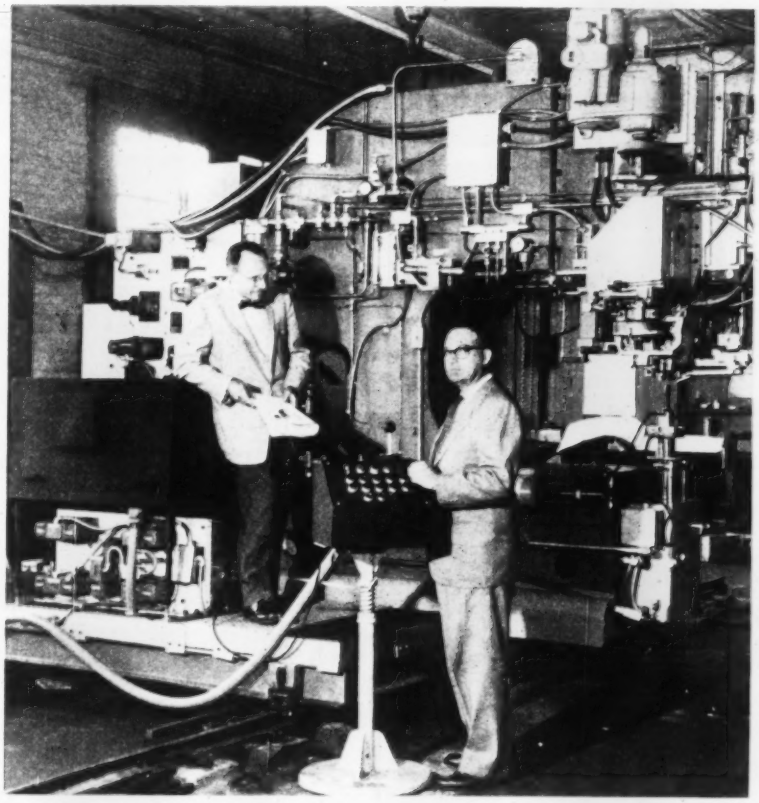
Because the extrusion process provides a mechanical lock, it avoids damping problems which make for rotor failure, and it also gives a continuous grain flow structure between the blade roots and the hub which makes for a stronger bond.

**Costs** — Savings are significant. Mr. Webb indicates that Ford paid $4000 for a wheel machined from solid material in early experiments. Production wheels have cost $500 to more than $20,000. Mr. Webb says it's now possible to make a comparable wheel for less than $100, excluding the cost of the blades which are about $1.35 each. The finished products meet rigid safety specifications.

Steel Improvement has tried almost every type metal and alloy for rotors. Mr. Russ believes that materials which withstand temperatures in the 3800 to 4000° F range can be worked. Molybdenum, columbium, and tantalum are in this area.

Ford and Steel Improvement have a prototype gas turbine rotor made of 422 stainless with carbon steel inserts. Its price: About 61 cents a pound. A rotor with a hub of Udimet 500 with carbon steel inserts costs about $4.90 a pound.

**Outlook**—Messrs. Russ and Webb indicate the process lends itself to automation. Continuous forging of rotor blades could be run down one line and meet the hubs which are chopped off in proper lengths from billets. The blades can automatically be placed in the retaining ring and held while the matrix is poured around them. Electronically actuated forging presses can be used to ram home the hub billets, eject finished parts, and carry them to final minor machining.



**NUMERICALLY CONTROLLED RIVETER** section for B-52 wings locates and positions thousands of holes within 0.01 in., drills and countersinks, senses skin thickness, measures and cuts frozen aluminum alloy rivet slug to size, flattens top of positioned rivet, and shaves off excess metal. General Riveters Inc., Buffalo made it for Boeing Airplane Co. Unique feature: Machine moves over work.

# Detects Vibration

**Serious breakdowns are frequently avoided by immediate sensing of vibration increases**

POTENTIAL failures get faster attention when you install a device called a vibration detector, says William H. Swann, assistant plant manager, Pacific Northwest Alloys Inc., Spokane.

He estimates savings have come to $500 a year since he put one on a large air compressor three years ago. (It supplies his firm's production and maintenance air needs.)

**Location** — The small detector, called a Vibraswitch, is mounted on the side of the compressor. When functioning is abnormal, the device detects vibration increases and triggers a shutoff.

Mr. Swann says the device has worked five times. The shutoff saved the compressor from serious damage and prolonged production shutdowns.

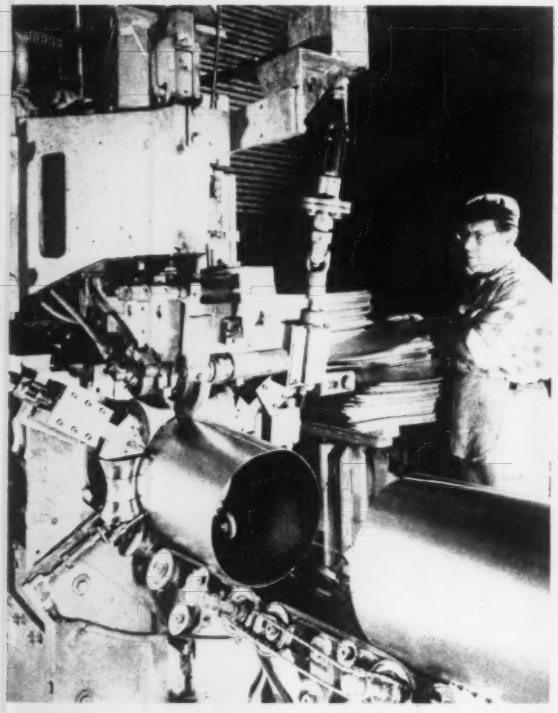
Three stoppages were caused by loose or broken screws. In one case, a bearing cap bolt was broken. Finally, the valve lifter broke on the high pressure side of the compressor.

Vibraswitch is made by the Aeronautical & Instrument Div., Robertshaw-Fulton Controls Co., Anaheim, Calif.

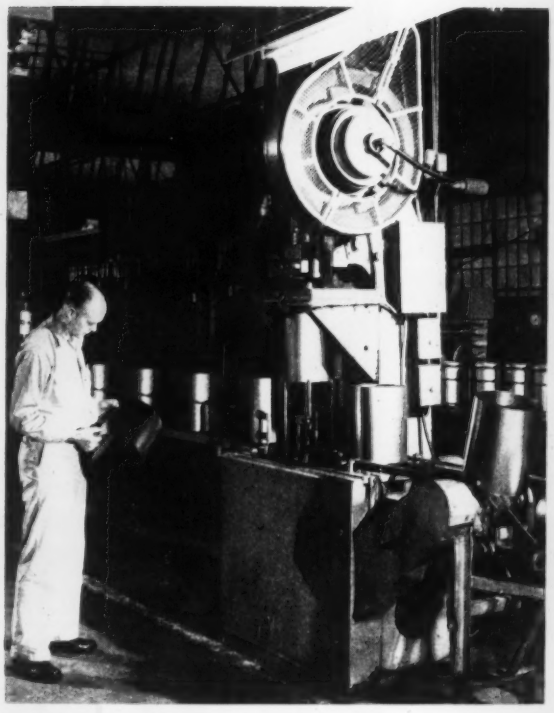
Use of the detector is not limited to air compressors. There's a model for virtually every plant situation. Several thousand installations are already in service.

## CORRECTION

IN STEEL's "Guide to Tool Steels & Carbides," (Apr. 21) please add the following to the Ceramic Cutting Tool Table on Page S-5: Metallurgical Products Dept., General Electric Co., 11147 E. Eight Mile Rd., Detroit 32, Mich., producer of 0-30 cemented oxide tools. Delete listing No. 22 (Disston Div., H. K. Porter Company Inc.) on Pages S-20 and 21.



Steel sheets are hand fed into the first machine where they are rolled to shape and lapwelded



Expanding dies in the sizing machine assure that the containers have exact form

# Pails Are Stretched to Shape

**Automatic sizing machine insures roundness. Cold working action stress relieves the containers and minimizes wrinkles along welded seams. Production cycle is described**

TRIPLE benefits stem from the use of an automatic sizing machine in the production of petroleum, paint, and chemical pails at United States Steel Products, Alameda, Calif. The containers are perfectly round, and the cold working stress relieves them and minimizes wrinkles along welded seams.

The body sizer shapes 5-gallon pails. Its 12 expanding die segments can enlarge their diameter as much as $\frac{1}{8}$ in.

**Initial Forming**—Steel sheets are sheared to size and deburred with an edge grinder. They are hand fed to a two-strand chain conveyor system which automatically moves the container bodies down the production line.

The blanks are rolled into cylinders and lapwelded in one operation. After sizing, a spinning head with four curling rolls and an expanding die forms a swedge or concave bead around the top of each pail. It strengthens the container and helps it resist distortion at its open end.

**Finishing Operations**—A "neck in and flange" machine reduces bottom diameters so the pails can be securely stacked for shipment. This operation forms a bottom flange through the use of an internal expanding, external compression die.

Twin pneumatic dies punch holes on opposite sides of each pail body to permit attachment of "ears" which will hold the handle.

The bottoms are double-seamed into the bodies after liquid adhesive has been applied to prevent leakage. A machine with grooved rollers does this cold spinning operation.

After a riveting machine secures the "ears," the pails are air tested for leaks and passed through an infrared oven which dries all surfaces.

An automatic paint spraying unit applies protective coatings of lining materials internally while the external surfaces are color finished. The finishes are baked.

After a final inspection of the bodies, covers and handles are attached, and the pails are packaged for shipment.

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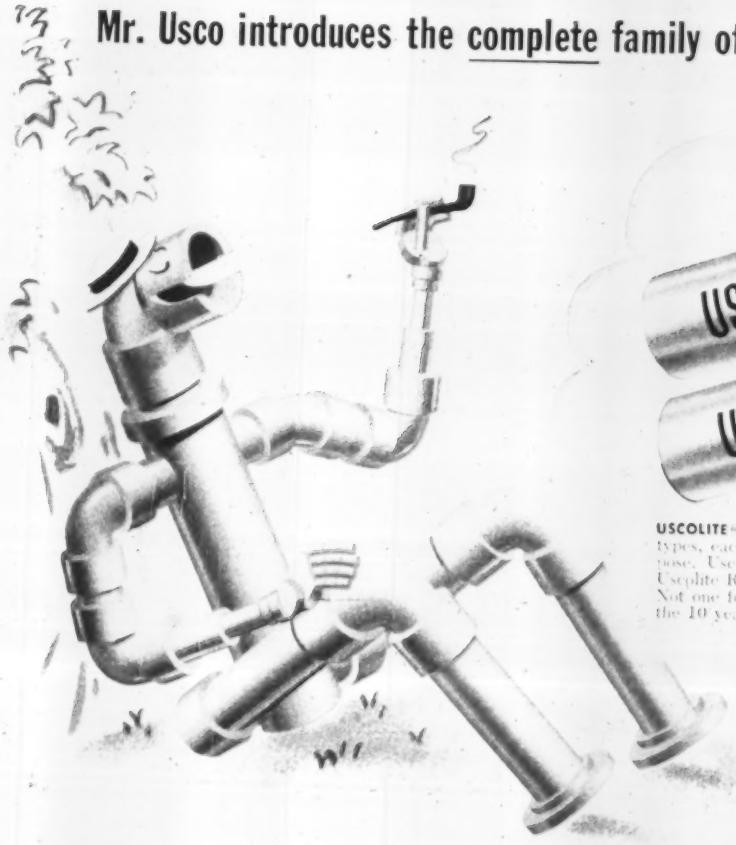
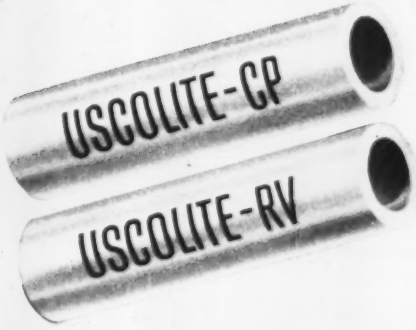
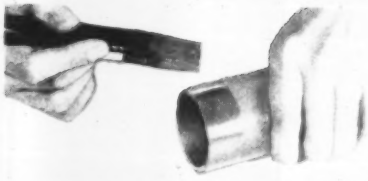
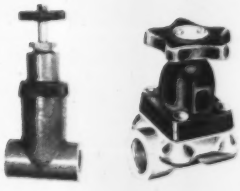





**USCOLITE*** plastic pipe comes in two specific types, each equally good for its particular purpose. Uscolite CP for high impact resistance. Uscolite RV (PVC) for active oxidizing agents. Not one foot of pipe has had to be replaced in the 10 years since first installed.



**USCOWELD*** Fittings are the only solvent-weld fittings with an interference fit. Greater joint strength, faster insertion. Non-porous, leak-proof. Made of either Uscolite CP or RV materials.



**USCO* VALVES** offer a choice of either Hills-McCanna diaphragm valve or Vanton "Flex-Plug" gate valve.

**USCOFLOW** is a new, black utility pipe, especially suited where low first costs are a factor. It is a blend of styrene-base resin and synthetic rubber for good impact resistance and high tensile strength.

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# United States Rubber

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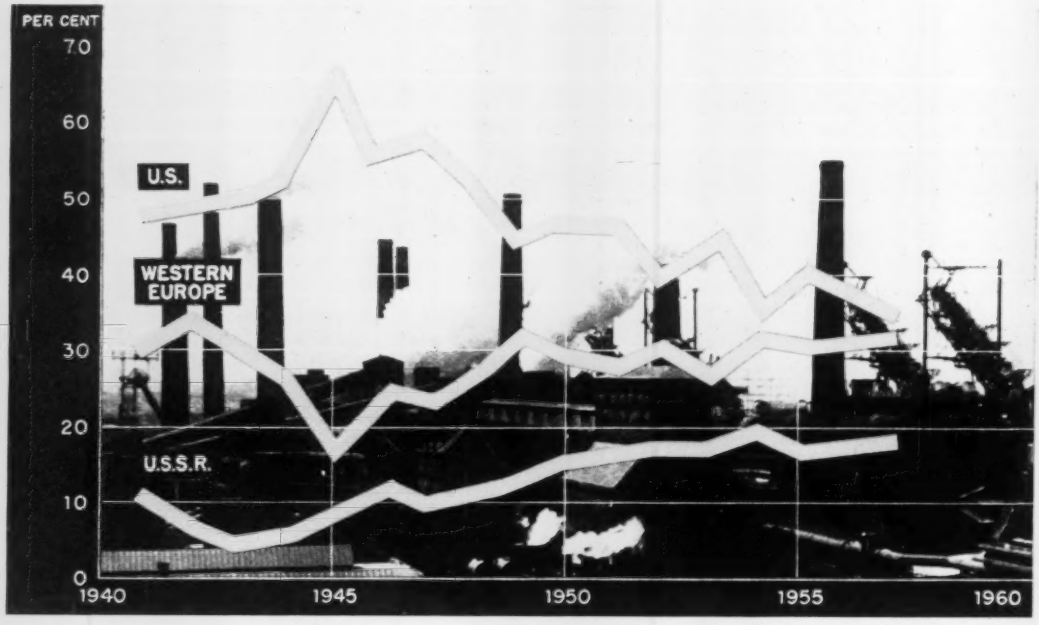
In Canada: Dominion Rubber Company, Ltd.

World Production of Steel Ingots and Castings




# Balance of Steel Power Shifts

**America's dominant steelmaking position is slipping, while Russia and Europe are coming up fast. A research director points out some of the areas to watch**

WESTERN EUROPE is well on the way to doubling its prewar steelmaking capacity. By 1960, it will be 122 million net tons a year. No doubt about it, the world steelmaking position of the U. S. is declining steadily.

When we entered World War II, we were making half the world's steel ingots and castings. Western Europe accounted for 30 per cent, Russia 10 per cent. Western Europe's contribution is still about the same, but we have slid back to 35 per cent. Russia has climbed to 20 per cent.

At the rate Russia is climbing—from 9 million tons in 1943 to 56 million tons in 1957, she will soon be able to challenge the U. S. as the dominant steel producing nation.

The warning was voiced by Dr. D. L. McBride, director, metallurgical process development, applied research, U. S. Steel Corp., at a recent SAE meeting.

**Behind the Growth**—Dr. McBride asks: How have Western Europe and Russia been able to boost their steel production by over 152 million tons since 1944, while our capacity has gone up only 50 million?

Certainly, the nations have done some things in common. Part of their increases came through new plants and equipment. Ores are being beneficiated, furnaces enlarged, and material handling improved. Changes are being made in refractories and in combustion practice.

Europeans are doing still more: They're using self-fluxing sinter in blast furnaces, operating blast furnaces with a second ring of tuyeres at the bosh level, processing low grade ores unsuitable for direct use in the blast furnace by direct reduction (the Krupp-Renn process), and partially reducing high grade ores in the Wiberg furnace. They're desiliconizing and desulfurizing hot metal, using oxygen

## 22 Tons of Cast Steel Against The Sea

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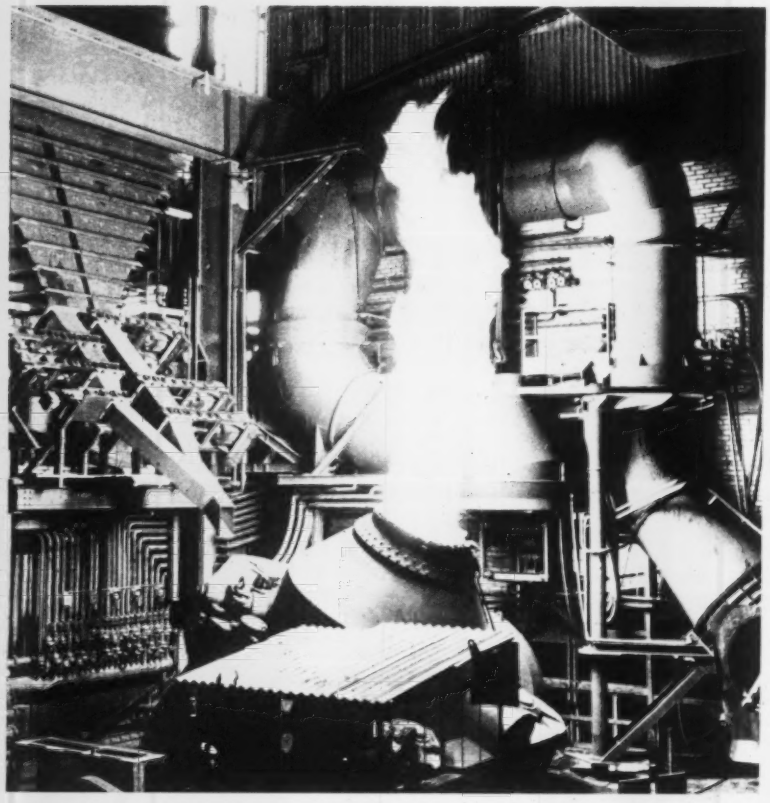


Kaldo rotating oxygen converter at the Stora Kopparbergs Berslags A/B works in Sweden, one of the newer European developments

**PROGRESS . . .**

roof jets in open hearth furnaces, and continuously casting steel. They are making wide use of basic refractories for open hearth roofs, walls, and checkers.

**Oxygen** — Virtually every integrated steelworks in Western Europe has facilities for producing high purity oxygen in large quantities at low cost. The British Oxygen Co. Ltd. is even supplying oxygen through grid systems to all steel plants in the Scunthorpe and Sheffield areas in England.

Because of the demand for peak production of steel in Russia and the need for lower nitrogen steels for flat-rolled products in Western Europe, those areas are probably farther advanced than the U. S. in the wide scale use of oxygen, Dr. McBride believes.

**Low Shaft Furnace**—In Western Europe, the severe shortage of coking coals has stimulated work on the low-shaft blast furnace. The basic idea of the low shaft is the simultaneous carbonization of high volatile, noncoking bituminous coal and the reduction of briquets made of a mixture of coal, iron ore fines, and fluxes.

A conventional high-shaft blast furnace needs a coke plant, a sintering plant, and a gas cleaning plant. For a low-shaft blast furnace, the briquetting plant is expected to replace both coke plant and sintering plant. The furnace would be lower, but it may need a gas cleaning and tar condensation plant.

**Longer Hearths** — The relative proportions of the experimental low-shaft furnaces are similar to those of conventional high-shaft furnaces. (In a modern American blast furnace the ratio of working height to hearth diameter is about 3 to 1.) Research workers are hoping to enlarge the hearth area without making the furnace higher by using an oval or rectangular hearth.

For reasons of blast penetration, the narrow side of the hearth may be limited to 7 ft, but the broad side might be enlarged to 18 ft, giving a hearth area of up to 125 sq ft.

**Pilot Furnace** — A low-shaft furnace under construction at Troisdorf is expected to produce about 110 to 130 net tons of pig iron per day when using briquets prepared from low grade ores and non-coking, high volatile coal. In contrast, a high shaft furnace of the same hearth area could produce 300 to 350 net tons per day when burdened with quality coke and beneficiated high grade ores, but such a small conventional blast furnace is now considered obsolete and uneconomical.

Until the maximum capacity for the low-shaft blast furnace is established, its future will remain in doubt. It depends on its ability to smelt small quantities of pig iron from local low grade ores and non-coking coals at a lower investment and operating cost than a modern high-shaft furnace can when operated with a beneficiated burden.

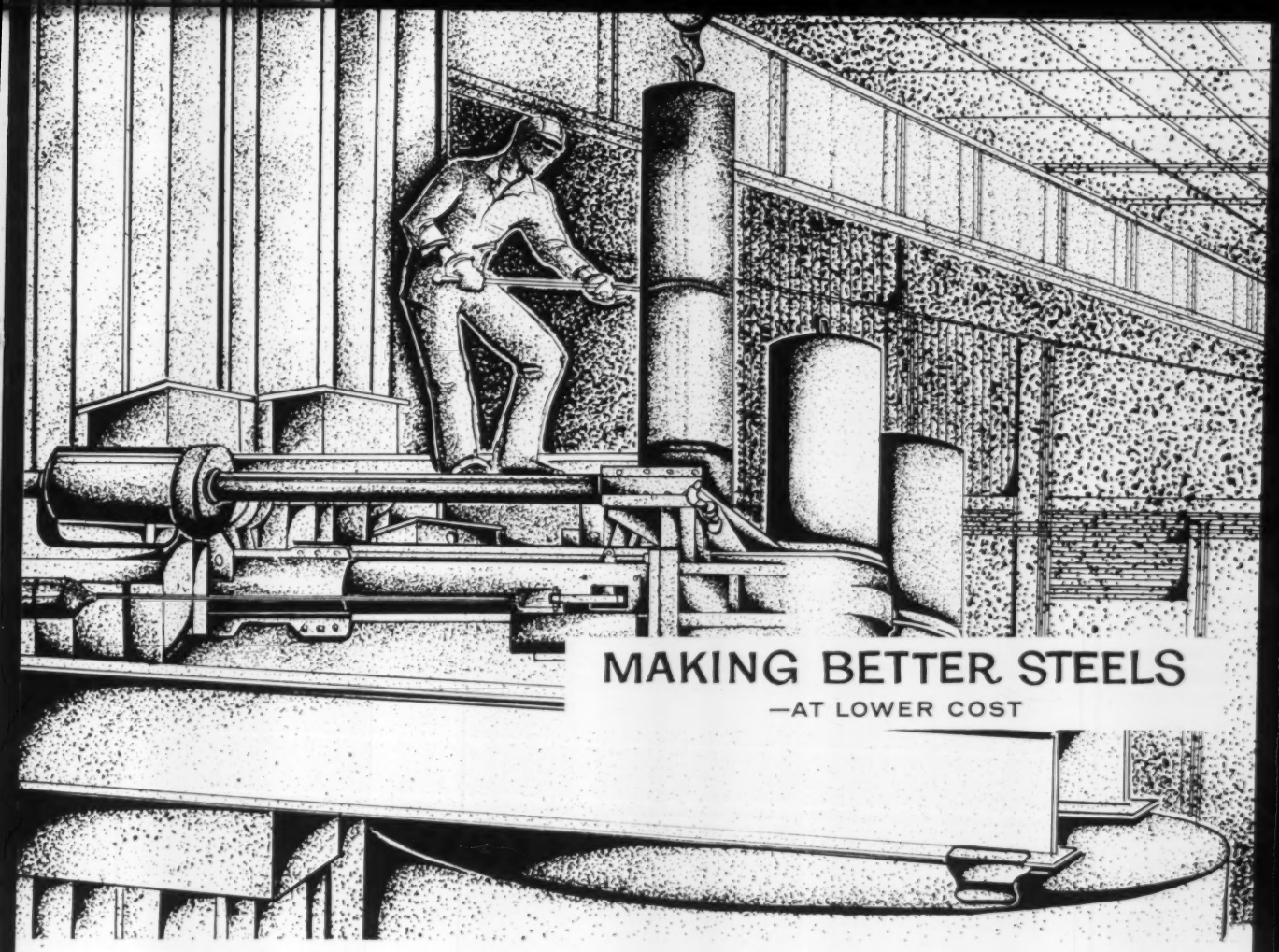
**Electric Smelting**—In countries which have little metallurgical coke but abundant low cost electric power, electric smelting furnaces are an economical substitute for the blast furnace. They use only half as much coke as the ordinary blast furnaces but require about 2000 kw-hr per ton of pig iron.

Electric smelting furnaces have been operated in Norway, Sweden, Italy, and South America. Probably the largest installation is a plant in Norway with three 18,000 kw furnaces which, in total, should produce about 600 to 650 tons per day, or less than half as much as one large, modern blast furnace.

**High Phos Ore**—Many European iron ores contain roughly ten times more phosphorus than the North American ores, and pig irons smelted from them will contain 1.5 to 2.0 per cent phosphorus. Much European steelmaking capacity has to be designed to make low phosphorus steels from high phosphorus pig irons.

The Thomas (basic) pneumatic process has become the dominant European steelmaking process for treating this kind of iron. It accounts for about one-half of the steel produced in Western Europe.

**Better Thomas Steel**—The high nitrogen content of Thomas steels makes them inadequate for some applications because of their higher

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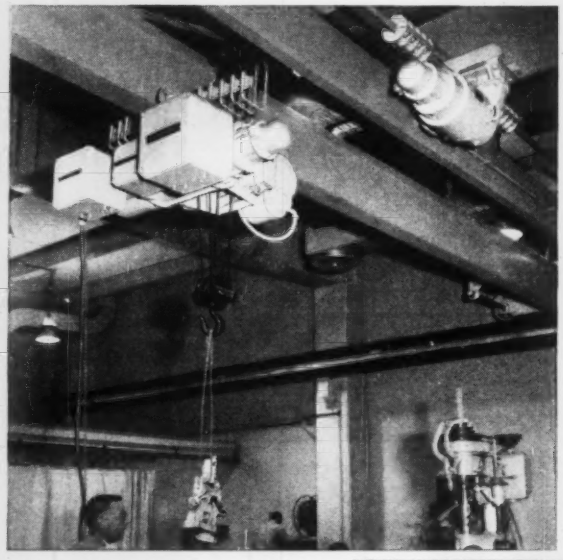

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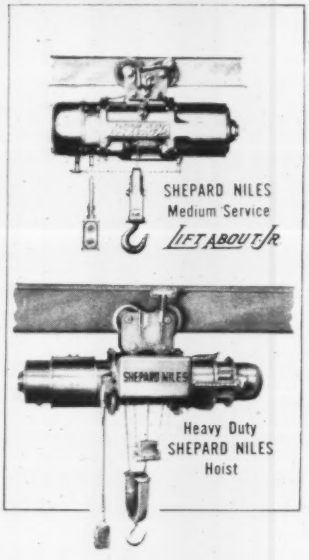


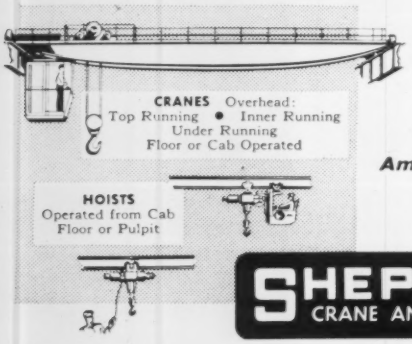


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strength, lower ductility, and susceptibility to strain aging. Many attempts have been made to reduce the nitrogen content by:

1. Working the blow at a low temperature.
2. Using a shallow bath.
3. Lowering the nitrogen content of the blowing gases (especially during the latter part of the blow) by using an oxygen enriched mixture, mixtures of steam and oxygen, or mixtures of oxygen and $CO_2$.

**High $O_2$ Blast**—More oxygen in the blast increases the scrap melting capacity of the Thomas converter. This permits expansion of steelmaking capacity without adding new pig iron and coke oven facilities.

With straight air blowing, the Thomas charge is about 4 per cent scrap and 96 per cent pig iron, making a steel which averages 0.012 per cent nitrogen. Enriching the blast to 30-32 per cent oxygen makes a 16 per cent scrap charge possible, and the nitrogen content of the steel drops to 0.006 per cent.

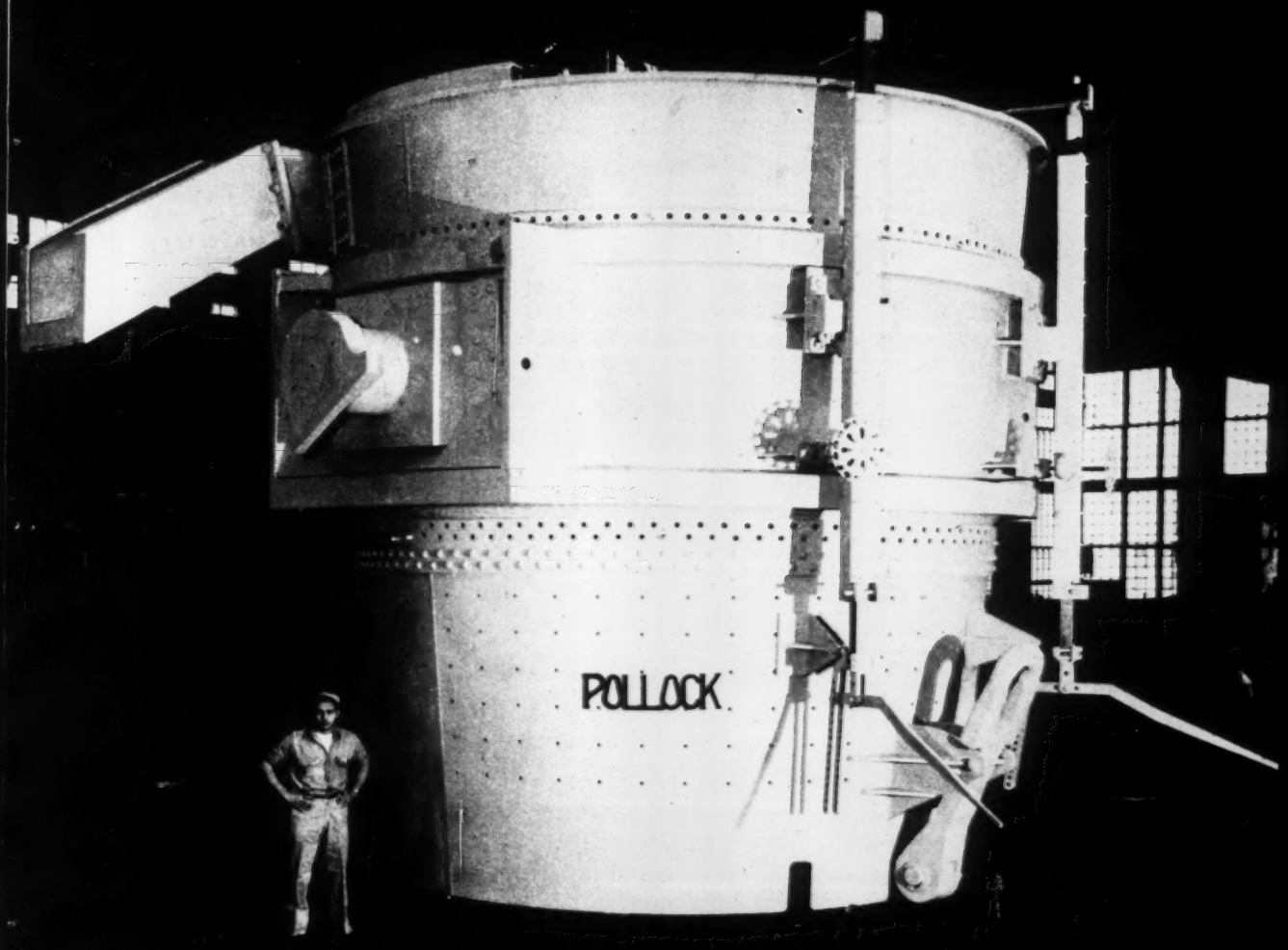
Today, 15 million to 20 million tons annually, or about one-half the Thomas steel produced in Western Europe, are being blown with an oxygen enriched blast. All of the 11 Thomas steel plants in Western Germany are using it.

**High Production** — Another advantage of oxygen enriched blast is shorter blowing time. This raises the potential output of the converter, but makes it necessary to use a coolant to prevent fast erosion of the lining. Steel scrap can be used as a coolant, but steam or carbon dioxide are effective.

If the conventional air blast, with its objectionable nitrogen content, were replaced completely by a properly balanced steam/oxygen blast or a $CO_2$/oxygen blast, the nitrogen content of Thomas steel would be no higher than that of basic open hearth steels. The $CO_2$-oxygen process is not being used on an industrial scale, but experiments have demonstrated its value. Superheated steam is available in every steel plant, and the cost of generating it is considerably lower than the cost of producing either carbon dioxide or high purity oxygen.

**Top-Blown Converter**—Everyone has been watching the top-blown

# LARGEST OPEN HEARTH LADLE in the world today-385 TON PAYLOAD




● This big open hearth ladle is so large it must be shipped in three sections. It weighs 175,000 pounds without refractory lining – stands 17 feet, 3½ inches high – is 19 feet at trunnion centers. Most important — IT HAS AN INITIAL CAPACITY OF 385 TONS! The ladle was electrically welded, completely shop-assembled and stress-relieved prior to shipment.

This ladle, and ten others like it, go to a new open hearth plant. They represent the advanced engineering and fabricating services furnished by The William B. Pollock Company. When you plan increased capacity at your plant, consult the Pollock engineers. They'll help you develop practical solutions.

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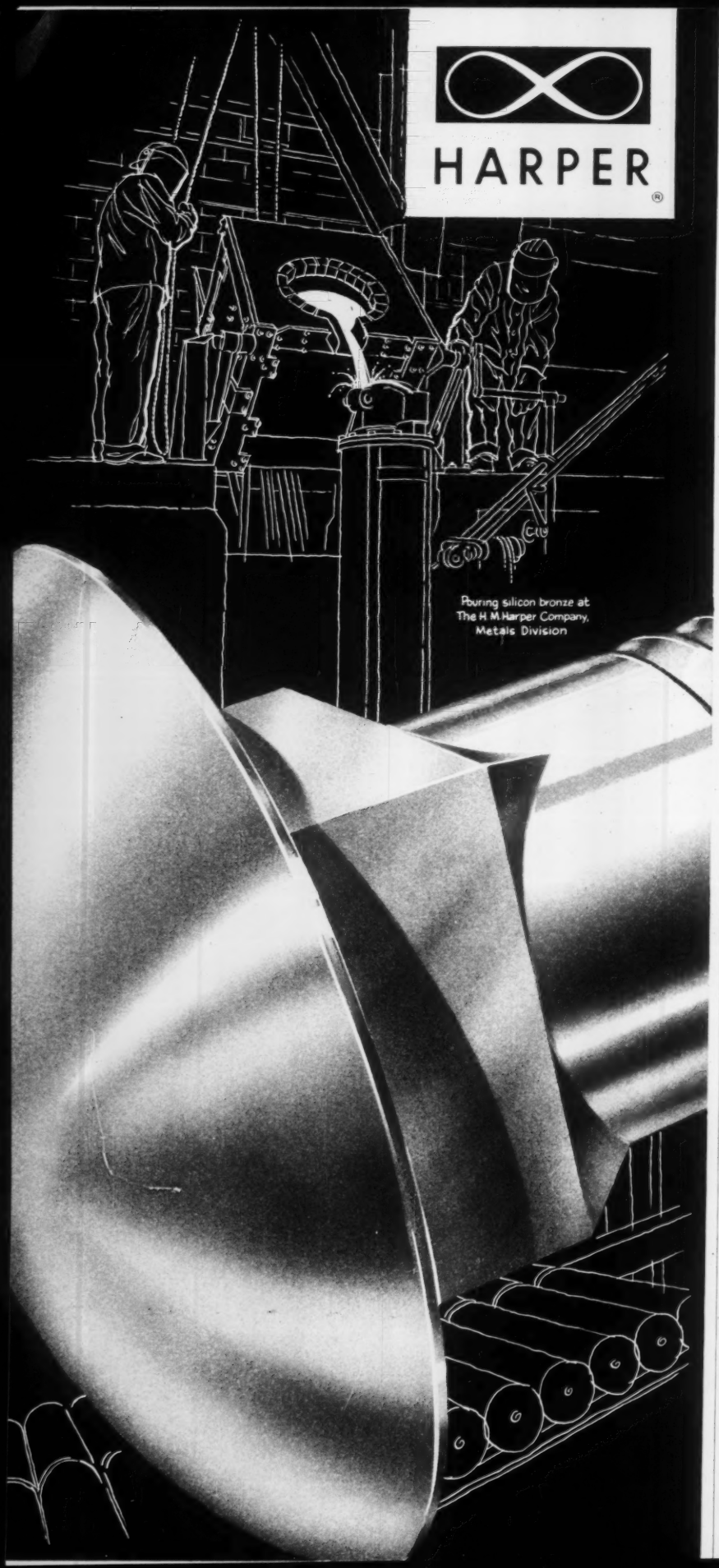


**PROGRESS . . .**

oxygen steelmaking method, first put into commercial operation in late 1952 by steel plants at Linz and Donawitz, Austria. World capacity of this oxygen process in operation or under construction now amounts to 16 million to 17 million tons annually.

With any of the oxygen processes, temperatures in the zone where oxygen strikes the bath may be sufficient to volatilize iron. The resulting iron loss may amount to as much as 1 per cent of the weight of the charged metal. The volatilized iron rapidly oxidizes and appears as a dense brown fume that has to be removed from the exhaust gases.

**Kaldo Process**—The Domnarvet Steel Works of the Stora Kopparbergs Berslags A/B, Sweden, has been doing pilot plant work on an oxygen process, using a tilted, rotating vessel in which the oxygen is introduced into the atmosphere above the bath. This is the Kaldo rotary oxygen steelmaking process.

It will be the basis for a new steel plant at Oxelosund, Sweden. The plant will have two 80-ton rotating furnaces and should produce about 500,000 tons of ingots annually for rolling into high grade plate.

The pear-shaped Kaldo vessel is tilted about 15 to 20 degrees from the horizontal while operating, and it may be rotated in this position at 30 rpm. A single opening serves for charging and discharging of the metal, for introducing the oxygen, and as an outlet for waste gases.

**Kaldo Advantages**—The rate of oxygen input and speed of rotation can be regulated separately and give the operator a way to control agitation of the slag and metal and the relative rates of elimination of carbon and phosphorus. This is especially important: To become commercially important in European steelmaking, the Kaldo furnace must be superior to the Thomas converter for processing high phosphorus (2 per cent) pig iron into low phosphorus steels for flat-rolled products.

Phosphorus elimination in the Thomas converter does not occur until after nearly complete elimination of carbon; in the Kaldo furnace, phosphorus is eliminated si-

multaneously with the carbon.

**More Oxygen**—The amount of oxygen going into a Kaldo furnace can be varied within wide limits, depending on the amount of iron ore and limestone added to the charge. Although oxygen consumption is higher for the Kaldo process than for the top-blown oxygen method, this may not be economically unfavorable since the Kaldo process can use oxygen of lower purity (97 per cent) without the bath picking up nitrogen.

This should have a favorable effect on the economics of the process.

**Kiln Type**—The Oberhausen rotary furnace uses the same rotary principle as the Kaldo furnace except that the speed of rotation is much slower (½ to 2 rpm). It has the appearance of a rotary kiln, the furnace being charged and tapped at opposite ends. A distinct feature of the process is the use of two oxygen lances, one of which is immersed in the metal bath and injects high purity oxygen, while the other blows low purity oxygen (as low as 45 per cent) above the bath for burning the CO evolved by the bath reactions.

Larger amounts of iron ore, limestone, or steel scrap can be processed in the Oberhausen furnace than in the Thomas converter. Dephosphorization and decarburization go on together, and when using only a single-slag practice, steels containing as low as 0.07 to 0.08 per cent phosphorus and 0.003 to 0.004 per cent nitrogen can be made from high phosphorus Thomas pig iron. Double-slag practice should lead to steels with a substantially lower phosphous content, presumably even as low as European basic open-hearth steels.

A 60 and a 100 ton furnace are operating at Oberhausen. They have a total annual capacity of 480,000 tons of steel. Two Oberhausen rotary furnaces, each with a capacity of 100 tons, are being installed in a plant in South Africa to produce 1,080,000 tons annually.

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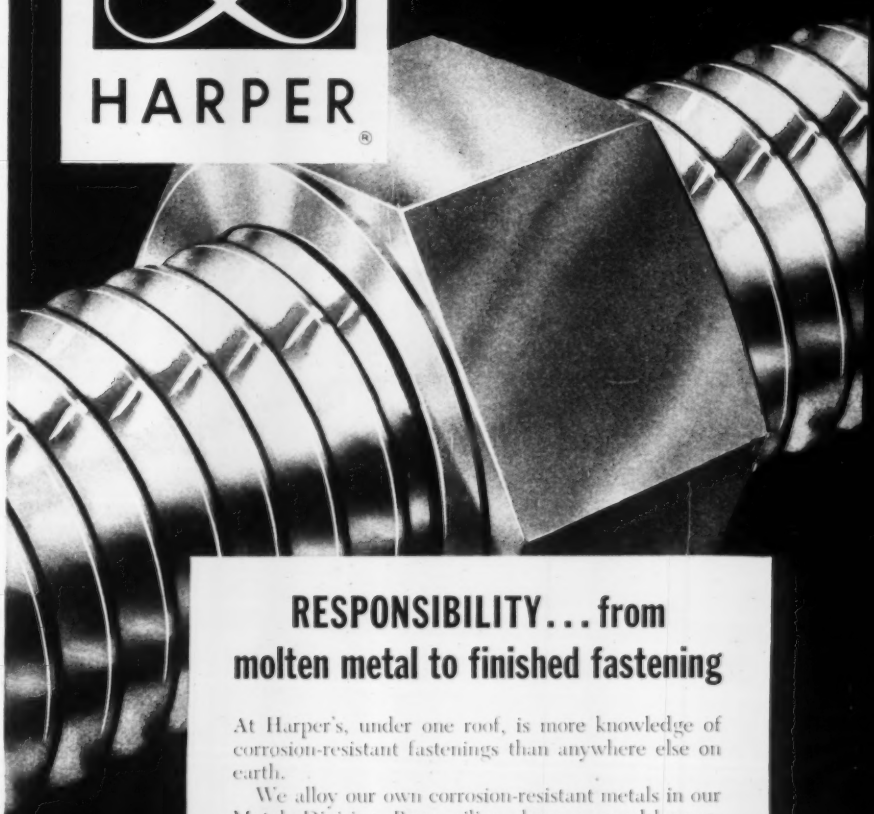

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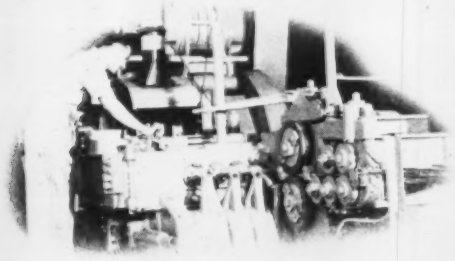

Operator observes .734" wire being headed into finished bolts

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# Barriers to Faster Cutting

**A report at the ASTE show highlights what we need to work at tomorrow's machining speeds. A survey of 1500 executives cites numerical control problems**

WE have a number of problems to solve before we can machine at superspeeds.

Six of them were brought up at the ASTE show in Philadelphia last Saturday in a talk by Norman Zlatin, who is a partner in Metcut Research Associates, Cincinnati:

1. Cutting tools are needed that can withstand higher tool temperatures that go with higher speeds. Temperatures above 1400° F will be common—ceramic tools are a step in the right direction.

2. As the speed goes up, rotating parts of the machine will have to be perfectly balanced. Any unbalance results in vibrations that are "disastrous" to tool life.

3. Machines will need more horsepower. As the rate of metal removal increases, horsepower requirements climb in almost direct proportion.

4. We'll need new types of cutting fluids, with the emphasis on cooling (more heat absorbing capacity than present fluids have). A possible answer: A cutting fluid containing solid particles that absorb heat as they melt and resolidify in the machine reservoir.

5. Higher cutting speeds mean that chips will be coming off faster. Machines will have to be equipped with mechanically operated units to remove the chips from the vicinity of the cutting tool.

6. With faster cutting, machining time becomes a less important part of the production cycle. To keep it in perspective, better methods will be needed for loading, unloading, and tool changing.

## The Trouble with Tape

Industry has plenty of interest in numerically controlled machine tools but too little knowledge about them. That's the conclusion of a study by ASTE.

Results show that most top tool engineers are not thinking about numerical control in terms of: "Is this or that equipment applicable to our operation? What will it cost?"

In many cases, respondents indicate they are not familiar with the systems used, how they operate, or exactly what equipment is available.

**The Big Ones**—A second conclusion is that larger plants (employing 10,000 or more) have done more pioneering in numerical control than smaller plants.

The high cost of experimentation largely explains the difference. Aircraft manufacturers are the biggest users.

**Best Potential**—Tool engineers believe that drilling is the process most adaptable to programmed controls, regardless of plant size.

Respondents who already had tape or punched card controlled equipment in their plants listed jig borers, milling machines, and riveters most often.

Savings in direct labor seem to be the most important single factor influencing adoption of numerical control. Next in importance are savings in machine time, improved accuracy, and reduction in equipment required.

The study disclosed that the controls will be most widely used where production runs are short. Respondents often referred to less leadtime and lower fixture costs.

Biggest objections: Cost is too high; systems are too complicated and not standardized; and "we need to know more about them." "Anything that can be done to obviate these difficulties will hasten the adoption of such equipment in our plant," was the conclusion of most respondents.

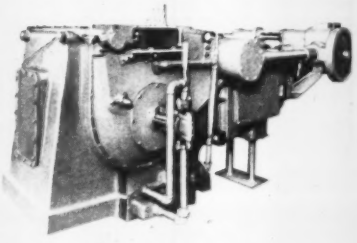
# Supercooling Pump

**Device helps cool tanks and processes more efficiently. By-product is useful power**

INCREASING demand for liquid gases used in missiles and such processes as welding and heat treating underscore the need for more efficient pumping machines.

One of the latest is a reciprocating expansion engine which has a thermal efficiency of up to 85 per cent. Used with a rectifying column, it can develop temperatures down to minus 300° F. Useful power is a byproduct.

**Efficiency**—To get temperatures under minus 100° F, you can extend the range of commercial refrigeration units by using two or more liquids in series. But it's more practical to expand the compressed gas through a throttle valve, or an expansion engine.



**PUMP**
. . . makes cooling more efficient

The expansion engine is more efficient, say the makers, Cooper Bessemer Corp., Mt. Vernon, Ohio. The same pressure that gives you minus 85° F through a throttle valve produces minus 260° F through a reciprocating expansion engine.

**Heat Exchanger**—Cooling cycles which use expansion engines also use heat exchange for continuous processes. That way, such engines give efficiencies of 25 per cent, compared with expansion valves which average about 10 per cent under the same conditions.

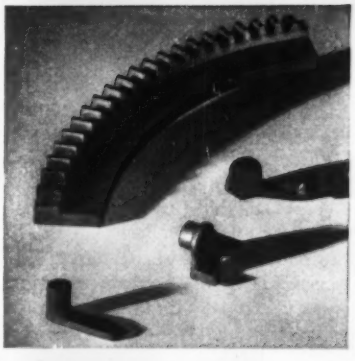
**Applications** — Expander engines aid refrigeration of large vessels, or they can cool storage tanks to prevent excessive evaporation. Another application is in large rooms used for subzero quenching of aluminum alloys.

# Taylor & Company specializes in versatility with HANNA PIG IRON

Taylor & Company, Inc., Brooklyn, New York, casts them little and big with equal ease—from dry-sand castings that weigh tons, to light close-tolerance parts cast by the shell-molding process. As many as 6,000 different patterns are used by Taylor in an average month.

For seventy-five years, this merchant foundry has turned out a variety of sizes and shapes with the aid of high-quality Hanna pig iron, especially Hanna Malleable and Hanna Silvery grades. President William Z. Taylor has never failed to find Hanna a dependable source of supply for any analysis he needs to meet his customers' requirements.

Whatever you cast, there's a Hanna iron to do it best. All regular grades of pig iron, plus HannaTite and Hanna Silvery, are available in 38-pound pigs and the smaller HannaTen ingots. For prompt service, call on one of Hanna's trained representatives.



△ *This 6-ton dry-sand casting will be a machine tool base that stands up to vibration and shock, provides a rock-steady foundation for accurate work.*

◁ *These small parts were cast to close tolerances by the shell-molding process, and need little or no machining.*

**THE HANNA FURNACE CORPORATION**
Buffalo • Detroit • New York • Philadelphia
Merchant Pig Iron Division of
**NATIONAL STEEL CORPORATION**

## Testing Plating on Titanium

Apply a 2000-kg load to specimen with a 1/8-in. hardened steel ball in a Brinell type machine. The quality of adhesion is judged by magnifying the fracture ten times and using this rating scale:

| Rating | Appearance of Fracture |
|---|---|
| POOR | Clean break at interface, with no plate shear. |
| FAIR | Some plate shear; little or no residual plating in "bare" area. |
| GOOD | Better plate shear; more residual plating in "bare" area. |
| EXCELLENT | 1. No fracture under 2000-kg load.<br>2. Extensive tapered plate shear with many plated spots in "bare" area. |

**Chemical reduction methods are used to plate missile parts at the Downey, Calif., plant of North American Aviation**

# Plating Helps Titanium

**Chromium plating, for example, overcomes galling and seizing tendencies. Copper and nickel are used as undercoatings. Missilemakers use electrical and electroless methods**

PLATING covers up some of titanium's shortcomings.

- Galling and seizing tendencies can be eliminated by chromium plating.
- Solderability and electrical conductivity can be improved by copper and silver plating.
- Scaling at heat treating and service temperatures above 1000° F can be prevented by nickel plating.

**No Cure-All**—Plating brings up two new problems: Oxide films on the metal, which are hard to remove, tend to prevent satisfactory adhesion of coating materials. Titanium has an unpredictable tendency to become embrittled by hydrogen when it's plated.

Aircraft and missile manufacturers are getting around many of the metal's surface limitations by using electrical and electroless plating methods.

**Undercoating**—Copper and nickel form a good bond with titanium and are recognized as the best materials for undercoating. A thickness of 0.0010 to 0.0020 in. is sufficient to assure adhesion of additional materials.

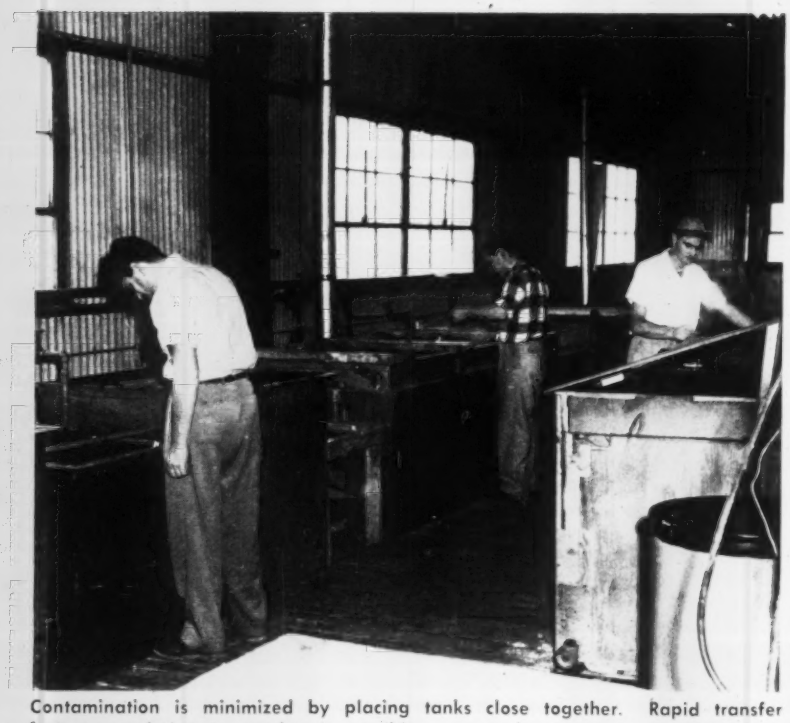
Nickel is commonly applied by the electroless method, and copper is electroplated. Plate thicknesses of up to 0.020 in. may be specified if they are used alone.

Many manufacturers believe that electroless nickel plating tends to induce hydrogen embrittlement. Engineers at North American Aviation say this can be eliminated by preparing the metal so the hydrogen

# ANNOUNCING

## THE FIRST VACUUM CAST CONTINUOUS HEAT TREATED STEEL ABRASIVE EVER OFFERED!

TURN THE PAGE



**Contamination is minimized by placing tanks close together. Rapid transfer from one solution to another is possible**

**PLATING . . .**

atoms will function as catalytic agents in the electroless solution.

**Plating Procedure** — Before plating, the metal is mechanically cleaned to remove everything except the oxide film (which reforms immediately).

If necessary, molten paraffin or pressure sensitive plastic tapes are used to mask the plating area. Titanium may be used as a conductive masking medium when it is desirable to prevent edge buildup.

Activation treatments are necessary immediately before the pieces are immersed in the copper or nickel plating bath. A typical treatment is the one used by Lockheed Aircraft's Missile Systems Div. in the processing of 4Mn-4Al and 6Al-4V alloys.

The metal is immersed in a solution of 3 parts 69 per cent nitric acid and 1 part 60 per cent hydrofluoric acid. After the evolution of red fumes, the part is rinsed thoroughly with distilled or deionized water. It is reimmersed in a solution of sodium dichromate, hydrofluoric acid, and distilled or deionized water, for 20 minutes at 180° F to boiling. The treatment is finished by a thorough rinse in cold running tap water.

Conventional plating baths are used. When two or more plating materials are applied, it is best to transfer the pieces from one processing solution to another as rapidly as possible. It minimizes the possibility of contamination.

**Example**—Silver is plated on titanium at North American Aviation so missile structural components can conduct current in the 200 to 400 megacycle band. The depth of current flow is 150 to 200 millionths of an inch.

An electroless process is used to deposit 0.0010 in. of nickel for the initial layer. It is covered with a similar deposit of copper to form a base for the 0.0020-in. layer of electroplated silver. Finally, a 0.000050-in. coat of gold is applied to prevent oxidation of the silver.

**Testing**—Plating is evaluated by exacting physical tests. One of the most reliable is the steel ball indentation test outlined in the box on Page 102.

Copper plating is often checked by simply soldering wire to the specimen, then pulling the wire until fracture. A deposit is considered satisfactory if no titanium is bared at the fracture.

## Better Alloy for Jets

An improved high temperature alloy, known as Lapelloy "C" has been developed by Carpenter Steel Co., Reading, Pa., for jet engine parts that require good ductility and impact resistance.

Compared with conventional Lapelloy, its structure has greater homogeneity, and its fabrication behavior and mechanical properties show greater uniformity, says Carpenter Steel. It is designed for highly stressed parts used at temperatures up to 1200° F. Lapelloy "C" has greater ductility and impact strength at both room and elevated temperatures than conventional Lapelloy when heat treated to the same strength level, states Carpenter.

High mechanical properties can be developed by heat treatment. The alloy has good resistance to scaling and oxidation for continuous service up to 1400° F. It has best corrosion resistance in the hardened and tempered condition.

Analysis of Lapelloy "C": Carbon 0.20-0.25 per cent, manganese 0.65-1.0, silicon 0.50 maximum, chromium 11.00-12.00, nickel 0.50 maximum, molybdenum 2.50-3.00, copper 1.75-2.25, nitrogen 0.06-0.10.

Machinability of the alloy in its annealed condition is comparable to that of Type 420 stainless steel. It can be purchased in billets, hot and cold rolled bars, wire, cold rolled strip, and special shapes.

## New Alloy on Market

Rene 41, a vacuum-melted alloy for use in the 1200 to 1800° F range, has become commercially available in a variety of forms.

Cannon-Muskegon Corp., Muskegon, Mich., is producing the nickel-base alloy as rolled or polished sheets (up to 48 x 120 in., in thicknesses down to 0.010 in.), wire (including a welding grade), and wrought bar stock.

Tensile strength ranges from 180,000 psi at 1000° F to 40,000 psi at 1800° F. Yield strength at 1000° F is 135,000 psi; at 1800° F, it drops to 35,000 psi.

Other properties: Good resistance to oxidation at temperatures up to 1800° F; good formability and machinability.

# You have never used abrasive like this new

# ROTOBLAST STEEL SHOT

## 1 Vacuum Casting

Electric furnace alloy steel, shotted in revolutionary new vacuum chamber for greater density, eliminating the voids and defects encountered in conventional steel shot. Gives you a fatigue resisting shot of much longer wear life.

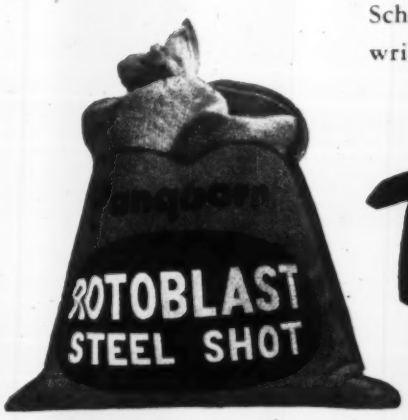
## 2 Continuous Heat Treating in Controlled Atmosphere

Nothing like it in the industry. Uniform heating of every particle, in zero oxygen atmosphere. For the first time . . . ball bearing heat treating quality in a tonnage product . . . gives you uniform hardness and longer life.

**New Rotoblast Steel Shot gives you much faster cleaning and the lowest blast cleaning cost ever!**

Schedule an early test! Talk to the Pangborn Engineer in your area or write PANGBORN CORP., 1600 Pangborn Blvd., Hagerstown, Md.

**See us at the Foundry Show**




# Pangborn

## Rotoblast Steel Shot

## Copper Welding Index

| Material | Approx. Analysis, % Cu | Zn | Sn | Others | Electrical Conductivity | Heat Conductivity | Welding Index |
|---|---|---|---|---|---|---|---|
| Copper | 99.9 | .. | | | 100 | 100 | H-500 |
| Commercial bronze | 95.0 | 5.0 | | | 55 | 62 | H-200 |
| Commercial bronze | 90.0 | 10.0 | | | 41 | 48 | H-200 |
| Red brass, 85% | 85.0 | 15.0 | | | 37 | 41 | H-200 |
| Red brass, 80% | 80.0 | 20.0 | | | 32 | 36 | G-175 |
| Cartridge brass | 70.0 | 30.0 | | | 28 | 31 | E-150 |
| Eyelet brass | 68.0 | 32.0 | | | 27 | 31 | E-150 |
| Yellow brass | 65.0 | 35.0 | | | 27 | 31 | F-150 |
| Muntz metal | 60.0 | 40.0 | | | 29 | 33 | F-150 |
| Tobin bronze | 60.0 | 39.2 | 0.8 | | 25 | 30 | F-150 |
| Phosphor bronze, A | 95.0 | | 5.0 | | 18 | 31 | D-125 |
| Phosphor bronze, C | 92.0 | | 8.0 | | 13 | 16 | D-125 |
| Phosphor bronze, D | 89.5 | | 10.5 | | 11 | 13 | D-125 |
| Cupro nickel, 20% | 80.0 | | | Ni/20.0 | 6 | 9 | C-125 |
| Cupro nickel, 10% | 85.0 | | | Ni/15.0 | 8 | 12 | C-125 |
| Nickel silver, 30% | 47.0 | 23.0 | | Ni/30.0 | 4 | .. | C-125 |
| Nickel silver, 18% | 65.0 | 17.0 | | Ni/18.0 | 6 | 9 | C-125 |
| Nickel silver, 18% | 55.0 | 27.0 | | Ni/18.0 | 6 | .. | C-125 |
| Nickel silver, 15% | 64.0 | 21.0 | | Ni/15.0 | 6 | 9 | C-125 |
| Nickel silver, 10% | 65.0 | 25.0 | | Ni/10.0 | 8 | 12 | C-125 |
| Manganese bronze | 52.0 | 39.0 | 0.8 | Fe/1.2 | 25 | 26 | C-125 |
| Silicon bronze, A | 95.0 | 1.5 | 0.8 | Si/3.0 | 9 | 9 | B-125 |
| Silicon bronze, B | 96.0 | 1.5 | 0.8 | Si/1.5 | 12 | 13 | B-125 |
| Beryllium copper | 97.7 | .. | .. | Be/2.2 | 20 | 25 | C-150 |

Source: Chase Brass & Copper Co.

Electrical and heat conductivity are shown as a percentage of pure copper. The letter prefixes in the welding index column express weldability: B indicates alloys which weld almost as easily as mild steel; C through F for increasing difficulty. G is a class that can be welded but not all results are perfect; alloys in the H class are impractical to weld. The number in the index designates relative secondary electrical current—100 is that used for mild steel. Numbers close to 100 are easier to weld.

# How To Weld Copper and Its Alloys

**Good conductivity makes these metals tough to resistance weld. But you can do it by sticking to sheets 0.020 to 0.060 in. thick and following these rules**

By LESTER F. SPENCER
Metallurgist
West Allis, Wis.

**PART FOUR**

YOU can resistance weld most of the copper base compositions.

But they're difficult to handle. The problems: 1. The metal welds itself to the electrodes. 2. Power input is too easily dissipated in the base metal. 3. You can only handle sheets 0.20 to 0.60 in. thick. (There are no satisfactory data for greater thicknesses.)

**Answers**—The author's recommendations are found in the tables accompanying this article. The figures aren't absolute; you may have to deviate from them on different jobs.

You can check the differences in weldability (shown by the welding index numbers) by making some pressuretight seam welds. They will point up the need for the judicious choice of alloys.

You'll also notice that the welding variables are different from those of mild steel. Coppers require shorter weld time, lower electrode force, higher current, and electrodes which are compatible with the alloy being welded. Adequate surface preparation is a must for uniform results.

**Time**—The usual "on" range is two to eight cycles. The heat input is dissipated throughout the work without welding it if the power setting requires longer periods.

Shorter times require equipment with high electrical capacity. You also need synchronous control for consistent quality.

**Pressure**—This value must permit good fusion yet keep distortion and indentation low. Avoid extremely low pressures. They bring on these problems: 1. The electrode sticks to the sheet. That leads to burning, electrode pickup, and too much lost time for redressing. 2. Indentation and weakness are found around the weld spots. (It's particularly true of Muntz metal and alloys which are extremely soft at temperatures near the melting point.) 3. You run into spitting or flashing, sometimes great enough to burn through a spot with explosive violence. (It happens frequently with high zinc alloys.)

**Electrode**—The electrical conductivity of the alloy dictates this choice. Highly conductive alloys usually require electrodes of low conductivity. (The reverse is also true.) Avoid electrodes with an electrical conductivity lower than 75 per cent I.A.C.S. (International Annealed Copper Standard).

Dome and radius-faced electrodes are easier to clean and align. Strive for uniform contact resistance—it is determined largely by surface cleanliness.

**Thin Gages** — Electrodes faced with a high resistance material like tungsten or molybdenum are necessary for light stock. A trace of tin is helpful—tinned wire may sometimes be spot or projection welded to other members.

You can buttweld copper without difficulty, but it requires a high energy input, a short welding time, and special procedures to take advantage of its limited plastic range.

Joining braided copper connector straps to copper terminals is an excellent example. Electrodes faced with pure molybdenum and cooling water prevent sticking. Strands of the braid can be welded the same way to prevent fraying. Timing periods range from 8 to 40 cycles, depending on size; pressure varies from 100 to 500 lb.

**Welding Brass**—These alloys require a wide range of procedures. In general, difficulties decrease as zinc content increases.

Alloys low in zinc are highly conductive and require low electrode pressure and fairly high energy input. Alloys high in zinc are less conductive.

Low brass, red brass, or compositions with more than 80 per cent copper are susceptible to electrode sticking. Welds may not be too strong.

The high zinc brass compositions require fairly high energy input, but there is little electrode sticking except with long welding time and high energy inputs.

**Hard To Weld**—Cartridge brass is somewhat difficult to handle. There is a strong tendency for the weld to blow through (explode) during long welding time, high energy input, and low welding pressures. Tip pickup is objectionable.

**Fairly Hard To Weld**—Common

## Spotwelding 0.036-in. Sheets

| Alloy | Time, Cycles | Pressure, lb | Current, Amperes |
|---|---|---|---|
| Muntz metal | 4 | 400 | 21,000 |
| High brass | 4 | 400 | 24,000 |
| Cartridge brass | 4 | 400 | 25,000 |
| Low brass | 6 | 400 | 24,000 |
| Red brass | 6 | 400 | 25,000 |
| Manganese red brass | 6 | 400 | 22,000 |
| Aluminum brass | 4 | 400 | 24,000 |
| Silicon brass | 6 | 510 | 22,000 |
| Silicon bronze | 6 | 400 | 16,500 |
| Phosphor bronze | 6 | 510 | 19,500 |
| Nickel aluminum bronze (work hardening) | 6 | 400 | 21,000 |
| Nickel aluminum bronze (precipitation hardening) | 4 | 510 | 21,000 |

R.W.M.A. Class 1 electrodes; 3/16 in. diameter tip, 30 degree approach

## Settings for Resistance Welding Silicon Bronze

| | Spotwelding | Seamwelding |
|---|---|---|
| Primary voltage | 220, 440, 550 | 220, 440, 550 |
| Weld pressure | 300 to 1000 lb | 300 to 1000 lb |
| Welding heat | 45 to 250 kva | 45 to 250 kva |
| Size of spot | 3/16 to 1/4 in. | — |
| Weld time | 1/4 to 1/2 second per spot; 6 to 8 cycles per spot | 2 cycles on, 4 cycles off<br>3 cycles on, 3 cycles off<br>4 cycles on, 2 cycles off |
| Interruption per inch | — | 11 to 18 |
| Welding speed | — | 3 to 4 ft per min |
| Electrode material | Mallory #3 or Copper | Mallory #3 or Copper |

Source: Resistance Welder Manufacturers' Association. (Tables 1, 2)

## COPPER WELDING . . .

high brass is less difficult to weld than cartridge brass, but keep pressure below 400 lb to minimize arcing or blowing through.

Muntz metal is more easily welded. There is little sticking tendency although you should avoid pressures that are less than 400 lb. Adding 1 per cent manganese to red brass markedly improves welding quality and increases weld strength. Even then, it is sensitive to sticking, especially after a coating forms on the electrode face. More time, pressure, and heat increase pickup.

**Easy To Weld** — Silicon brass gives welders the least trouble. You get top mechanical properties with about 400 lb pressure and six cycle timing. Use high conductivity electrodes with flat, 3/16-in. tips.

**Bronzes** — Both the silicon and phosphor bronze alloys are easily welded. In spotwelding silicon bronze, use a low energy input, but avoid two to four cycle timing since it can cause shrinkage voids.

Phosphor bronze requires a low energy input, and there is a tendency for electrode sticking and pickup.

Although those alloys are inherently hot short, the welds are strong but not too ductile. You can expect cracks from slight movements when the metal near the weld zone is heated within the brittle range.

The aluminum bronzes are like the silicon bronzes, but there is a lot of electrode sticking, pickup, and spitting—especially with high pressures. You can avoid that difficulty by using longer time cycles and higher currents and pressure.

Nickel silvers and copper-nickel alloys can be handled without too much difficulty. Just remember to use short time cycles to prevent indentation.

**Dissimilar**—Copper can be flash-welded to aluminum. It is a tricky combination, but it's becoming competitive with brazing and soldering.

Flash buttwelding of 0.036 in. diameter Tobin bronze is another example. Welds have a tensile strength of about 71,000 psi. Ductility is comparable to that of the parent metal.

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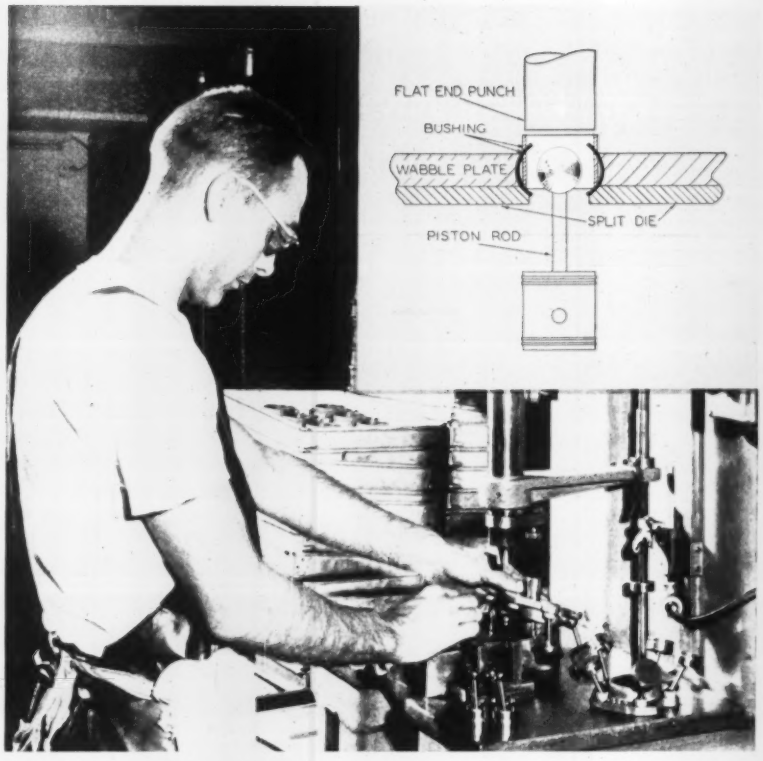
• *An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*




**Assembling the piston rods of a compressor to the wabble plate that actuates them. Inset shows the retaining bushing, before and after pressure is applied**

# Press for Precise Assembly

**Accurate control of hydraulic pressure permits close tolerance operations at GM's Frigidaire Div. A solenoid valve reverses the ram when pressure reaches 6 tons**

A HYDRAULIC press is used by Frigidaire Div. of General Motors Corp., Dayton, Ohio, for precise assembly of piston rods to a wabble plate used in the 5-cylinder compressor for automobile air conditioners.

**Wabble Plate**—It permits a reciprocating action of the pistons that is parallel to the axis of rotation. Each piston rod has a ground ball that fits into a socket machined in the cast iron plate.

A short sleeve or bushing is fastened in an annular recess formed around each socket. Its bore has a diameter slightly larger than that of the ball.

**Assembly**—The rod with the piston attached is hand clamped in a split die. The ball is in the axis of the spherical recess, but it is at a fixed distance above it.

The press operator sets the inverted plate so the ball enters the bore of one of the bushings and is against its spherical seat. An 8-ton Denison hydraulic press forces a flat end punch against the back face of the plate.

Pressure forces the lower end of the bushing into the die recess to produce a socket that locks the ball in place.

A solenoid valve reverses the ram at 6 tons. At this point the bushing forms a close fit without binding. It permits free rocking of the piston rod.

The ram retracts, the operator unlocks the die, releases the rod, and moves next rod into position.

An operator generally does 2000 operation during an 8-hour shift.

# Firth Sterling ...

PIONEER IN POWDER AND MOLTEN METALLURGY

## Only Circle C is quality controlled by impact testing

Every Circle C High Speed tool bit is tested under impact to make sure you get the best bit that can be made. This is the final test in a series of quality control checks made during each stage of production, from Firth Sterling's exclusive double melting process to the finished bit.

Being double melted, Circle C has greater homogeneity that assures toughness and consistent performance, delivers cutting capacity far beyond that of ordinary high speed steels. With Circle C bits you can use higher operating speeds, obtain longer tool life and increase your production. And the practical, well balanced composition gives Circle C unusual red-hardness and wear resistance, provides ONE grade for almost all your machining operations.

Circle C is one of a family of outstanding high speed steels, including Van Chip, Blue Chip and Star-Mo, accepted throughout industry for reducing machining costs today. All are evidence of Firth Sterling's metallurgical leadership—a background of over 68 years of research and development.

* * *

*For assistance with your metallurgical problems, powder or molten, simply call your nearest Firth Sterling sales office or distributor. For complete information on High Speed tool bits—**and the new Circle C throw away inserts**—write for descriptive bulletin TBI-57:* FIRTH STERLING, INC., Dept. 81E, 3113 Forbes St., Pittsburgh 30, Pa. Offices and warehouses in principal cities.

**Visit our booth at the A.S.T.E. Show in Philadelphia—Booth 202**

**PRODUCTS OF Firth Sterling METALLURGY**

HIGH SPEED STEELS • TOOL & DIE STEELS • STAINLESS SPECIALTIES • HIGH TEMPERATURE ALLOYS
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**AMERICAN ORIGINALS IN IRON AND STEEL**

## *Iron pots from oyster shells?*

It was an anxious community that watched the firing of this country's first successful iron furnace during 1644 at Saugus, Massachusetts. Months of toil and the risk of precious funds were involved.

Not only were many observers awed by the great stone furnace, they were puzzled by the delicate mold fashion by the skilled iron founder, Joseph Jenks. Puzzling, too, must have been the dumping of alternate layers of ore and oyster shells into the flaming blast. "How do they make iron from oyster shells?" many may have asked. Of course, the shells were merely the iron maker's ingenious substitute for the limestone necessary to remove the impurities from the ore.

Excitement mounted like the furnace temperatures as the molten iron was tapped into the waiting mold. Finally, when the mold was broken, a tiny cooking pot was held aloft . . . the first infant product of an infant industry, now grown to be the largest of its kind in the world.

We at The J. E. Baker Company are proud of the part we have played in the further development of the iron and steel industry. For many years, Baker's Magdolite and Jebcolite have provided greater furnace efficiency and more uniform ingots at lower refractory costs. They are always five ways better: in composition, preparation, strength, economy and quality.

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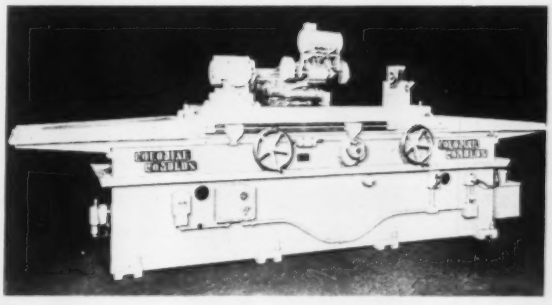
## Tool and Cutter Grinder Provides Economic Sharpening

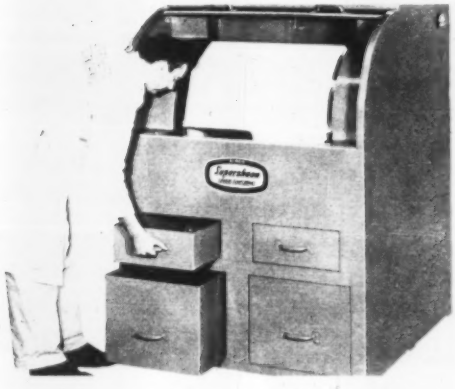
A universal tool and cutter grinder designed for the sharpening of large and heavy milling cutter assemblies provides original form and cutting effectiveness.

The universal grinder enables a plant to do its own milling-cutter assembly sharpening with maximum ease and the utmost precision.

The need for carrying expensive cutters as spares or resharpening by a cutter manufacturer is reduced. Accuracy is to 0.001 in. runout of all working surfaces in grinding outside diameters up to 18 in. *Write*: Colonial-Romulus Div., Colonial Broach & Machine Co., Parkgrove Station, Detroit 5, Mich. *Phone*: Jefferson 6-2550



## Finishing Machine Has Built-in Media Separating System



A barrel finishing machine designed for processing small and medium lots of parts is equipped with a built-in media separating system.

Model DBO-2A has a twin compartment, 5.6 cu ft Neoprene lined barrel and built-in screening drawers to handle discharged loads from each compartment.

Barrel speeds from 8 to 38 rpm add to its ability to perform all types of finishing operations with close tolerances. Quick separation of pieces from the workload saves manhours.

The machine can handle total workloads up to 700 lb, and is ideally suited for limited finishing work, research, job lots, and use as an auxiliary unit. *Write*: Almco—Queen Products Inc., Albert Lea, Minn. *Phone*: 3966

## Rigid Drilling and Boring Machine Has Vertical Spindle

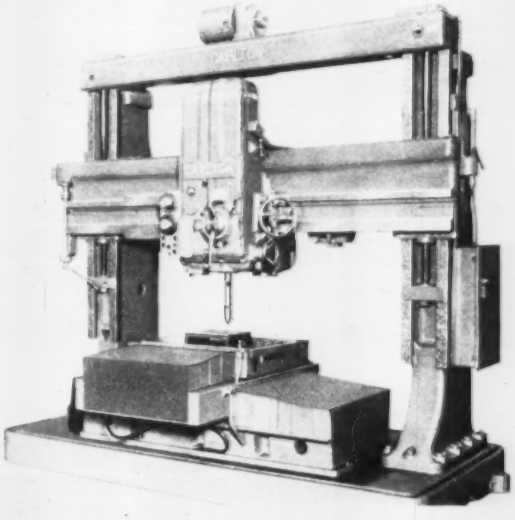
Model 3AR is a double box-column vertical machine produced for heavy duty, vertical drilling and boring operations.

The unit is designed to accommodate tape or hydraulically controlled positioning tables. When so equipped, it will increase hole drilling production by positioning the work faster and eliminating jigs.

It assures precision drilling-boring as well as spacing —made possible by the table and the rigidity of the double box-column construction.

Operating advantages include: Twin screw elevating for the rails, headstock movable to facilitate loading and unloading of positioning table, choice of preselected or manual shift spindle speed control, and hand feed wheel equipped with micrometer adjustment dial for depth boring.

Specifications include: Rail vertical travel, 27 in.; spindle vertical travel, 18 in.; horizontal head travel, 28 in.; and 36 spindle speeds. *Write*: Carlton Machine Tool Co., Cincinnati 25, Ohio. *Phone*: Kirby 1-3515

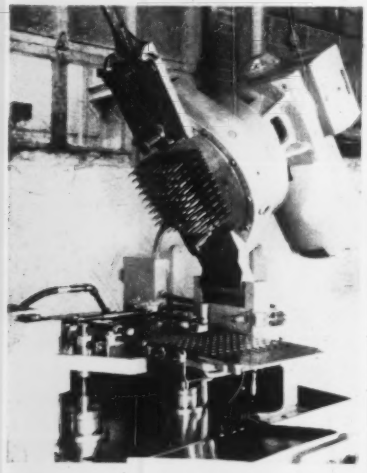


## NEW PRODUCTS and equipment

### Tapper Has 100 Spindles

A multiple-spindle nut tapping machine has a 100-spindle Zagar gearless tapping head coupled with a vibratory hopper for semiautomatic operation.

The machine taps 10-32 blanks at the rate of 72,000 an hour. Blanks are manually loaded into the hopper which feeds 200 pieces into the cavities of a jig.



Quick change of taps is designed into the machine—the head being on a hinge mechanism so that it can be raised to clear the working position. Broken taps and machine downtime are practically eliminated by a cleaning and sorting device used before blanks are fed into the hopper.

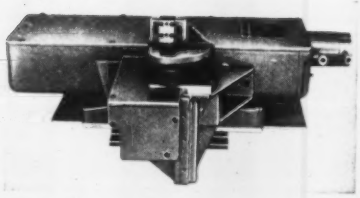
Use of standard machine castings and components assures custom quality at production prices. The machine is approximately 48 x 60 x 90 in. *Write*: Zagar Inc., 24000 Lakeland Blvd., Cleveland 23, Ohio. *Phone*: Redwood 1-0500

### Dresser Cut Is Continuous

Model 105 hydraulic contour wheel dresser is designed for convenient, out of the way location in the water pan of surface grinders.

It features automatic hydraulic operation, either from the grinder's system or from a separate power unit. Operation is tied into the grinding cycle, providing an uninterrupted cut across the wheel.

Master contour templates are quickly interchangeable so that jobs



may be changed easily. Diamonds are optically preset and dresser readjustment is unnecessary during diamond replacement. *Write*: Hoglund Engineering & Mfg. Co., 343 Snyder Ave., Berkeley Heights, N. J. *Phone*: Crestview 3-7188

### Brightens Cadmium Plate

Iridite 4P-4 permits a single dip process for chemically brightening and protecting cadmium plated surfaces. It requires no bleach and produces clear, bright films without stain. It rinses easily and has good corrosion protection. It is packaged in 100-lb drums. *Write*: Allied Research Products Inc., 4004-06 E. Monument St., Baltimore 5, Md. *Phone*: Peabody 2-9070

### Lapping Simplified

A semiautomatic, bench model, flat lapping machine measuring 13 x 18 x 10 in. features a 9-in. close grained cast iron alloy lapping plate.

The lapping surface is a precision ground unit, grooved both radially and spirally for maximum efficiency, and is heat treated to prevent distortion.

Volume output to tolerances of 11.6 millionths of an inch is readily obtainable. The option of utilizing automatic or hand lapping operation fits in with all types of lapping requirements. Specimen lapping is particularly simplified.

The lapping surface can be easily and quickly replaced with a plate

of different diamond charge for specific specimens. A portable mounting stand is optional. *Write*: Spitfire Tool & Machine Co., 2931 N. Pulaski Rd., Chicago 41, Ill. *Phone*: Palisade 5-1610

### Hard Metals Cut

The Model C-66 electric arc metal disintegrator's best application is in salvage work—removing broken taps, reamers, studs, setscrews, ejector pins, and bushings.

A built-in system pumps coolant through the electrode to wash away the particles of metal as they are removed. The unit is used in conjunction with other shop equipment, such as a drill press.

Cutting action is done by a series of intermittent electric arcs which disintegrate the hardest metals.

The unit provides a fast, economical, and accurate means of drilling curved and other odd-shaped holes in hard metals such as carbide, titanium, Stellite, or cast alloys. *Write*: Cammann Mfg. Co. Inc., 2700 Henninger Rd., Cleveland 9, Ohio. *Phone*: Ontario 1-2550

### Unit Measures Waviness

The Wavometer is an instrument for measuring waviness on symmetrical surfaces of rotation. The unit illustrated will handle inside and outside diameters of surfaces up to 18 in., and provides for angular adjustments of 30 degrees above to 70 degrees below horizontal.

The instrument gives meter reading of the rms average height of the waves in two wavebands, di-

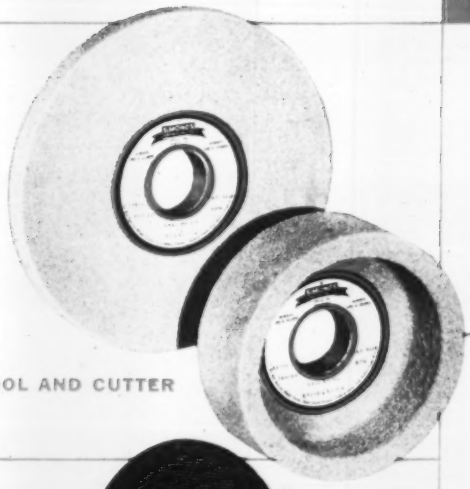
GENERAL PURPOSE

# SIMONDS ABRASIVE CO.

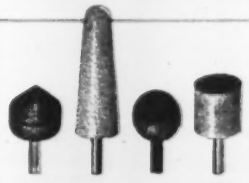
## Grinding Wheels

## For Savings and Efficiency on ALL your grinding jobs

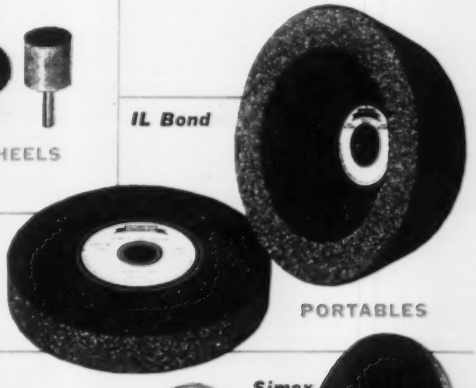
Grinding wheels for fast stock removal or micro-finishing! Toolroom wheels with new SA Borolon abrasive for improved cutting action! Portables with new IL Bond for longer wheel wear, better grinding! These, plus mounted wheels and fast long-wearing, non-burning cut-off wheels, are part of Simonds complete grinding wheel line — the line for consistently superior results with savings to match. Catalog bulletins on request.



TOOL AND CUTTER

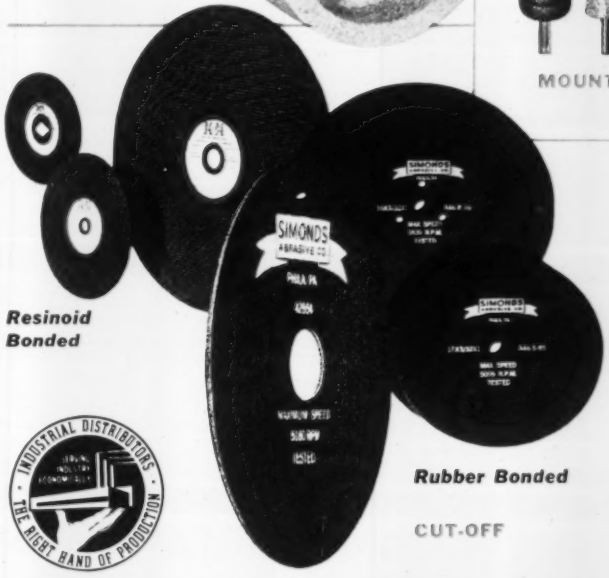


MOUNTED WHEELS



IL Bond

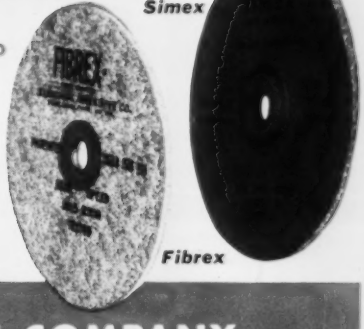
PORTABLES



Resinoid Bonded

Rubber Bonded

CUT-OFF



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BRANCHES: Philadelphia • Chicago • Detroit • Shreveport
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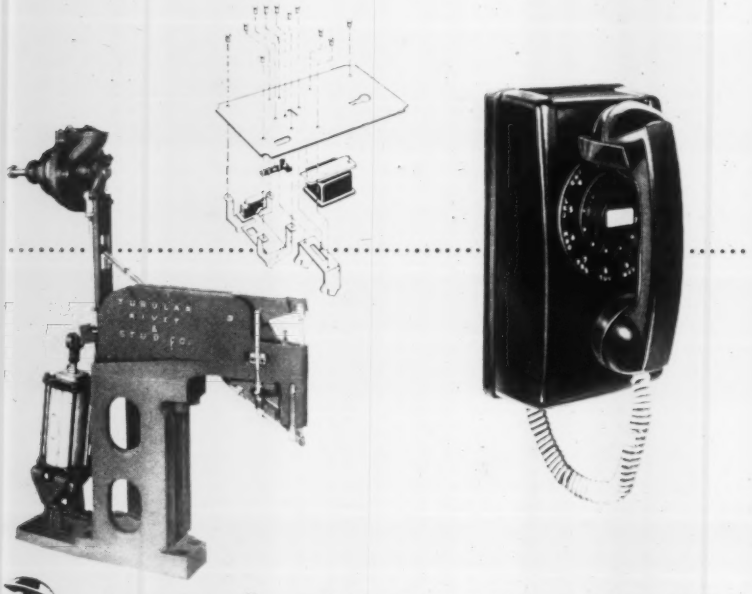
# SPEEDS FASTENING BY 60%



## Tubular's RIVETS AND RIVETERS HELP *Western Electric**

### Maximum Efficiency Requires Flexibility

A substantial reduction in the cost of assembling components of the wall-phone base-plate resulted when engineers from Western Electric's Indianapolis Works and **Tubular** solved a fastening problem — they developed a Multi-Head Riveter assembly consisting of 11 automatic, air-operated machines. A bank of 5 riveters was joined to a 6-machine bank by a bridge with a rolling fixture. This method replaced the preliminary fastening plan which was based on 40 operations, 2 machines and 2 operators. The new Multi-Head assembly reduced estimated fastening-labor costs about 35%. When production requirements increased tremendously, an additional nominal investment modified the bridge and added a second rolling fixture. Two operators were then easily able to boost the production rate an additional 60%.

### *WESTERN ELECTRIC

Western Electric, manufacturing and supply unit for the Bell System, produces telephones, wire and cable, switching systems; and in addition, makes important contributions to defense projects such as DEW Line and Nike Guided Missile Systems.

### TUBULAR of Quincy

If assembly speed is an important factor in your own cost picture, take the time right now to learn how **Tubular's** Rivets and Automatic Riveting Machines may help you. **Tubular's** Riveters can feed and set one, or as many as 12 different rivets on different planes at one time. Call our nearest office or send us your blueprint, at no obligation, for complete information and technical help.

**Tubular Rivet & STUD COMPANY**
WOLLASTON (QUINCY) 70, MASS.

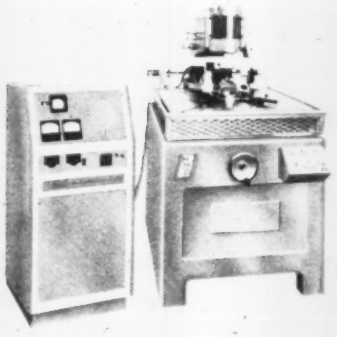
FASTEN AUTOMATICALLY BETTER and FASTER with TUBULAR'S RIVETS and MACHINES

MIDWEST OFFICE & WAREHOUSE — CHICAGO

BRANCH OFFICES: ATLANTA • BUFFALO • CHARLOTTE • DALLAS • DETROIT INDIANAPOLIS • LOS ANGELES • NEW YORK CITY • PHILADELPHIA • ST. LOUIS SAN FRANCISCO • SEATTLE

*See your local classified directory for phone numbers*


## NEW PRODUCTS and equipment



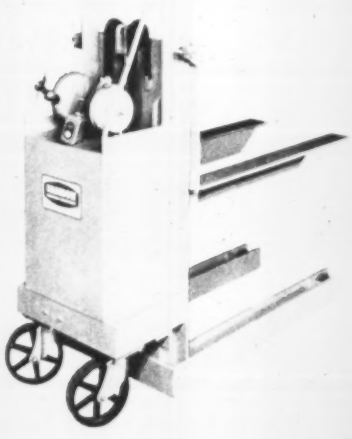
rectly in microinches. In addition, an oscilloscope shows the general shape and spacing of the waves in either waveband. A loudspeaker transforms the surface irregularities into sounds, and deviations from the normal are easily detected by the operator.

The unit is simple to operate, requiring no special skill or technical knowledge. *Write*: Micrometrical Mfg. Co., 345 S. Main St., Ann Arbor, Mich. *Phone*: Normandy 2-5626

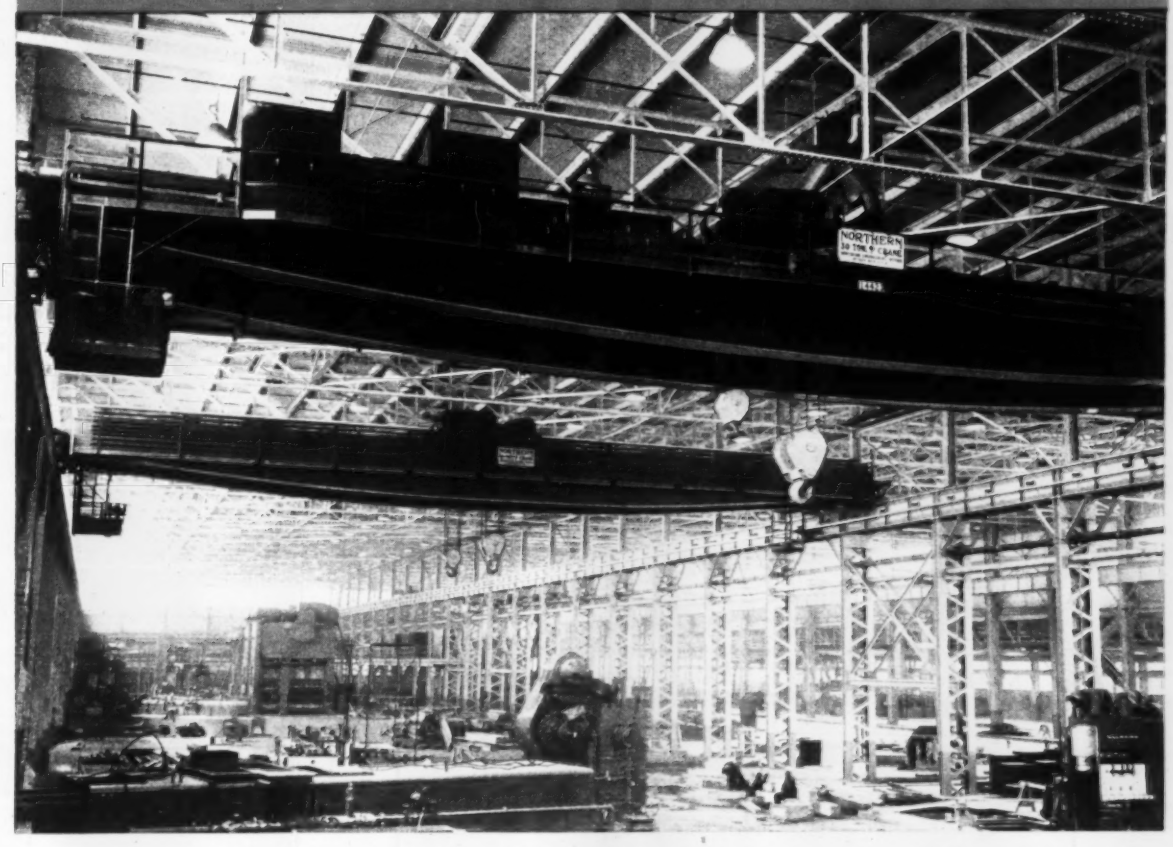
### Trucks Under $1000

Electrohydraulic lift trucks for fork or platform operations are available at low cost for production lifting jobs.

Manually portable or mobile electric powered models may be had in the Samson line. Lift heights on standard models are from 6 to 68 in., and single or three phase motors can be specified for 110, 220,



# Look Overhead··· see "NORTHERN"




## these notable twins assure dependability

LOCATION — *Press bay of a large, new plant manufacturing rear axle parts and components for automobiles and trucks.*

SPAN — *96 feet 10 inches, centers of runways.*

CAPACITY — *30-tons on Main Hooks, 10-tons on auxiliary hooks.*

ELECTRICAL EQUIPMENT — *60-HP motors on Main Hoist, Auxiliary Hoist and Bridge Travel, and 15-HP motor on Trolley Travel, with full magnetic control and direct current on brakes.*

**ADVANTAGES**—These twin NORTHERN cranes serve twin heavy press lines located at each end of the press bay. Designed for heavy duty requirements with compensating type bridge end trucks, and equally suitable electrical equipment and controls, they dependably and safely speed machinery installation or relocation, and assure smooth, uninterrupted flow of work in today's and tomorrow's automated production.

*Let us explore similar possibilities in your plant*

**NORTHERN MATERIAL HANDLING EQUIPMENT**

**NORTHERN ENGINEERING WORKS**
**210 CHENE ST. • DETROIT 7, MICH.**

DURASPUN

20-FOOT FURNACE ROLLS
**Centrifugally Cast**

. . . of Duraloy HH Alloy, one of the most widely used high chrome, medium nickel alloys.

Two items concerning these furnace rolls may be of particular interest:

a—the size: 20 feet long—14" OD, ¾" wall thickness

b—*welding operations* by which reducing cones and shafts (both statically cast of the same alloy) were welded to the centrifugally cast rolls

These two items will serve to emphasize two phases of our service: (1) the large size centrifugally cast tubes we are able to produce and (2) our machining and finishing facilities, including welding.

Our new 16-page general Bulletin — 3354-G — gives complete details. Would you like a copy? When writing or calling would you mind telling us the general nature of your high alloy casting requirements? Better yet, if you have specific requirements on which we could help, let us have the details.




The DURALOY Company
OFFICE AND PLANT: Scottdale, Pa.
EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.
ATLANTA OFFICE: 76—4th Street, N.W.
CHICAGO OFFICE: 332 South Michigan Avenue
DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

## NEW PRODUCTS and equipment

or 440 volts (alternating current). The lifting mechanism may be powered with a 12-volt battery (a selenium rectifier charger and battery are included).

Loads will not descend suddenly, and they can be held in any position with power off. A precision safety bypass valve is preset to rated capacity, and overload will not damage pump or motor.

Pushbuttons on the machine and remote and foot control switches allow operation from more than one point. *Write*: Dept. SIC, General Sales & Engineering Co., 4525 N. Clark St., Chicago 40, Ill. *Phone*: Longbeach 1-4644

### Portable Brinell Tester

This unit has a capacity exceeding 29 in., a 3½-in. throat, and weighs 45 lb. It can be used in any position.



The unit uses a 5 or 10 mm carbide ball with any load range up to 3000 kg. *Write*: King Tester Corp., 440 N. 13th St., Philadelphia 23, Pa. *Phone*: Walnut 5-2481

### Argon Purity Raised

Regular industrial argon gas with a guaranteed 99.995 per cent purity when delivered (it contains less than 50 parts per million of impurities) has been put on the market. It is available for all orders without special price or grade category.

Argon delivered as a liquid surpasses the minimum purity of the

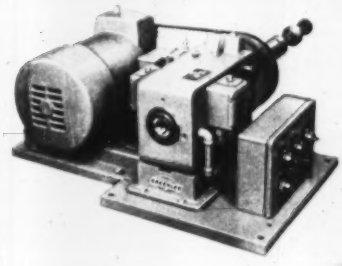
## NEW PRODUCTS and equipment

gas, the liquid averaging less than 25 parts per million of impurities. Moisture is practically nil.

It is available in large quantities in either form. *Write*: Linde Co., division of Union Carbide Corp., 420 Lexington Ave., New York 17, N. Y. *Phone*: Murray Hill 6-5100

### Hydraulic Boring Unit

Model S-7 is a compact unit that allows precision boring in production assembly. It can be mounted



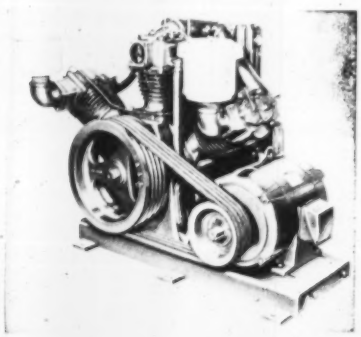
on jigs, fixtures, and multistation machines. *Write*: Greenlee Bros. & Co., Rockford, Ill. *Phone*: 3-4881

### Compressor Is Compact

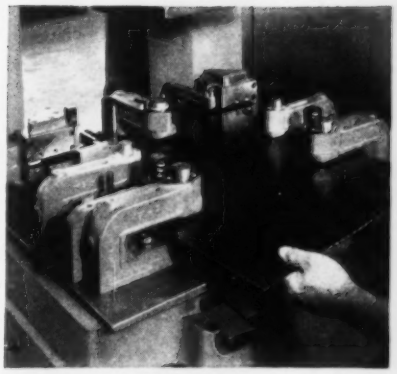
A stationary air compressor, 25-hp Model 25S2, is a high volume unit rated for continuous duty at 175 psi.

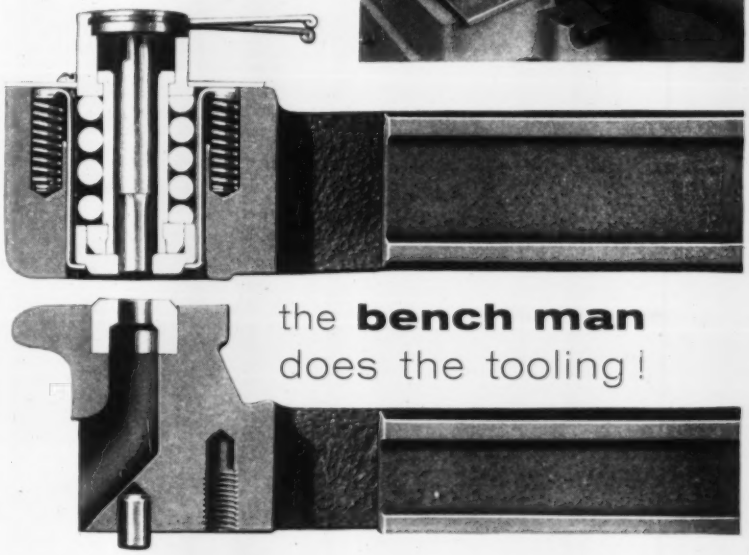
It fills the need for a high pressure compressor in which displacements are 120 cfm at 175 psi and 870 rpm, and 133 cfm at 125 psi and 960 rpm.

The 25S2 has two stages, is air cooled, and is driven by an electric motor. It meets requirements of compactness, light weight, and minimum operator attention. By having the motor partially beneath one cylinder, the complete unit length is 60¼




Strippit Punching and Notching Units are easily mounted to templates, T-slotted plates or rails in unlimited patterns for long press runs or quick-change pilot runs. Complete range of standard tools, or "specials" made up on request.





the **bench man** does the tooling!

# STRIPPIT multiple punching and notching

**THE ABOVE CUTAWAY** of a Strippit Punching Unit — one of a wide selection for flats, structurals and extrusions up to ¾" mild steel — illustrates the extreme flexibility, high production and economy of the Strippit system.

**NOTE THAT** each unit is complete with punch, die button, stripping guide, guide button, lifter assembly and retainers — all quickly interchangeable in a husky holder and actuated by the press ram. Multiple punching — and notching — press setups are easily bench-assembled on drilled mounting templates, with each unit accurately located by the pilot pin in its base. Press down-time is almost negligible in setups of Strippit Punching Units, Notching Units, Punch and Die Assemblies or combinations of all three.

Write today for full details and if you wish, a demonstration on your work at your plant by a Strippit mobile unit.

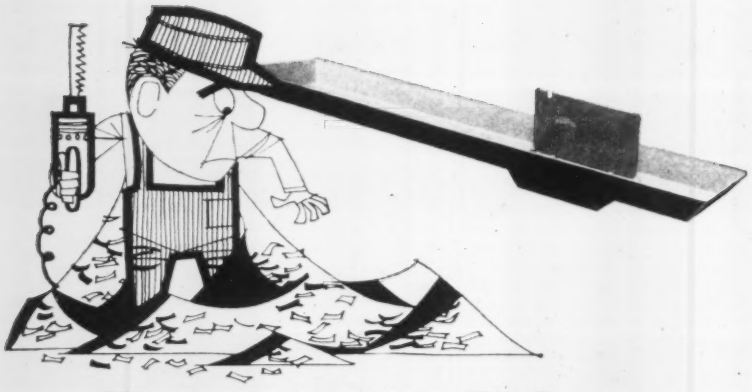
Warehouse stocks in Chicago and Los Angeles.

WALES STRIPPIT COMPANY

HOUDAILLE INDUSTRIES INC.

**210 Buell Road, Akron, New York**

*Manufactured in Canada by Strippit Tool and Machine Limited, Brampton, Ontario*



**We don't fabricate flinders**
but we do make **flinder-catchers**

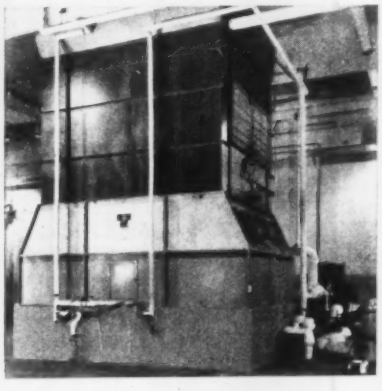
You know how flinders are! Unless you watch out, you're soon hip deep in them. A flinder is a small piece, fragment, splinter.

For real flinder-catchers—chip, drip and oil pans—call us. We can also fill your requirements for better weldments, machine bases, guards, covers and sub-assemblies. Control cabinets, too. Send us your blueprints today for prompt and pleasing estimates.

**LITTLEFORD**

*Littleford Bros. Inc. 425 E. Pearl Street Cincinnati 2, Ohio*

**WHEREVER YOU NEED TO COOL A FLUID... and have a problem of water supply or disposal... use NIAGARA "AERO" HEAT EXCHANGER**



► Evaporating a very small amount of water in an air stream you can cool liquids, gases or vapors with atmospheric air, removing heat at the rate of input, controlling temperature precisely. Save 95% of the cost of cooling water; save piping, pumping and power. You quickly recover your equipment cost.

You can cool and hold accurately the temperature of all fluids, condense vapors, cool water, oils, solutions, intermediates, coolants for mechanical, electrical or thermal processes. You have a closed system free from dirt. You have solved all problems of water availability, quality or disposal, maintenance expense is low.

You may apply this to solvent recovery, vacuum systems controlling reactions, condensing distillates, cooling reflux products.

*For more information, write for Bulletins 120, 124, 135. Address Dept.*

**NIAGARA BLOWER COMPANY**
**Dept. S-5, 405 Lexington Ave., New York 17, N. Y.**
*Niagara District Engineers in Principal Cities of U. S. and Canada*


## NEW PRODUCTS and equipment

in. Unit weight is 1810 lb.

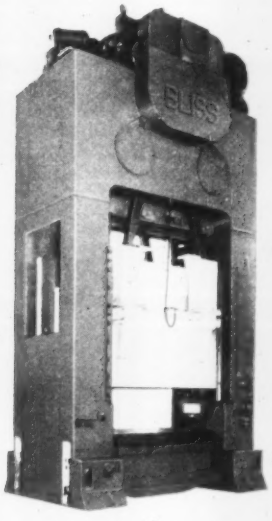
Cylinders are alloy iron and are cooled by a fan which draws air through an intercooler and directs it over the cylinders and heads.

Standard equipment includes a dual control which gives a choice of start-and-stop duty of both compressor and motor or a continuous running of motor with intermittent compressing. *Write*: Sales Promotion Dept., Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis. *Phone*: West 3-9350

### Press Has Low Draw Speed

A line of enclosed, straight side, double action presses, designed to operate at high speeds yet maintain draw speed of 75 fpm, is available in capacities from 300 to 1600 tons.

Presses are offered in JIC sizes starting from 72 x 48 in. Featuring 2 or 4 point suspension on the inner ram, all sizes are driven by eccentric gears.



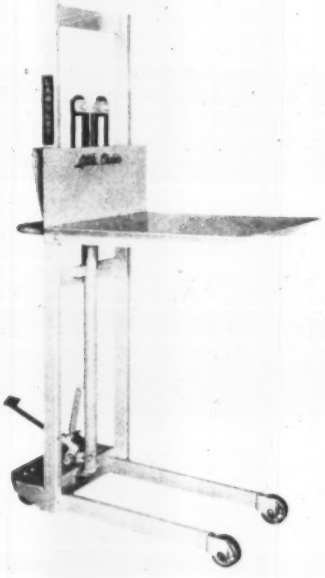

Units can be equipped with the Bliss electronic press drive. This permits reverse jogging without stopping and reversing the motor—saving time with die changes. A servo-system controls clutching and braking, electronically compensating for heat and pressure variations. The drive also allows a rapid advance to the work, a compensated automatic slowdown, and a fast return.

Flywheel, driveshaft, intermediate

shafts, and all slide adjusting mechanisms are mounted on antifriction bearings. Motorized slide adjustment is standard on plunger and blankholder slides. The slide may be furnished with manual adjustment. *Write*: E. W. Bliss Co., 1375 Raff Rd. S.W., Canton, Ohio. *Phone*: Greenwood 7-3421

## Lifts 750 lb Up to 65 in.

"Little Dickie" Model FPD is a mobile, foot operated, hydraulic lift and transport truck. Lift is derived from foot effort. Caster steering assures maneuverability.



This unit is for operations too small for the usual power lift equipment. *Write*: Langley Mfg. Co., 920 Cambridge St., Cambridge 41, Mass. *Phone*: Trowbridge 6-9031

## Large Loader Introduced

Payloader Model H-25 is a rubber tired, front-end loader with a rated carrying capacity of 2500 lb.

Power steering is standard and it has a short turning radius—6 ft to the outside rear hub. It can operate through 6-ft boxcar doors.

A power shift transmission and torque converter are matched to provide the maximum in speed of movement and ease of operation. The power-transfer differential automatically transfers more torque to the drive wheel with the best footing when slippage is encountered.

It is being offered with a choice of gasoline, diesel, or liquefied petroleum gas power. The 44-hp gasoline engine is equipped with wet sleeve cylinder liners and overhead valves.

For handling dense, compacted materials, the H-25 has a breakout force of 4500 lb and provides a bucket tip-back of 40 degrees at ground level for stability and balance.

With a carrying capacity of 2500

lb, it can handle a maximum load weighing as much as 125 lb per cu ft using a bucket with an SAE rated capacity of 20 cu ft. Interchangeable front end attachments include sweepers, grab devices, crane


Tough
Smaller
Lighter

Relative size of ordinary coupling required for effective handling of same volume

EVERYTHING YOU WANT IN A QUICK-CONNECTIVE PNEUMATIC COUPLING

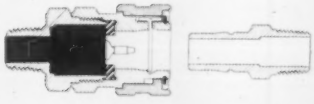
Hansen Series RL One-Way Shut-Off Couplings will handle any job in your shop using ¾" to ⅛" connections—from the air line to the air tool. All Hansen Series 2-RL Sockets and Plugs are interchangeable with each other. Likewise all Sockets and Plugs of the slightly larger, greater capacity Series 3-RL are similarly interchangeable with each other.

Consequently, by standardizing on either Hansen Series 2-RL or Series 3-RL Couplings, you eliminate any need for various size couplings in your hook-up—make it easy to keep stock of parts in balance—and hold inventories to a minimum.

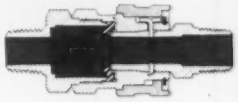
Machined from solid steel bar stock, Plugs and Sockets are hardened and rust-proofed for long wear. Locking ring provides positive lock and assures tight fit. Equipped with automatic sleeve lock.

THE HANSEN SERIES RL
QUICK-CONNECTIVE RING-LOCK COUPLING

Blue section shows how Socket, when disconnected, automatically shuts off air by leak-proof seal of metal valve against rubber valve seat.



Connected Hansen Ring-Lock Coupling. Blue section shows free flow of air through connected Coupling.



WRITE FOR THE HANSEN CATALOG

Here's an always ready reference when you want information on couplings in a hurry. List complete range of sizes of Hansen One-Way Shut-Off, Two-Way Shut-Off, and Straight-Through Couplings—including Special Service Couplings for L.P. Gas, Steam, Oxygen, Acetylene, etc.

REPRESENTATIVES IN PRINCIPAL CITIES

SINCE 1915 — QUICK-CONNECTIVE FLUID LINE COUPLINGS

THE HANSEN MANUFACTURING COMPANY

4031 WEST 150th STREET • CLEVELAND 35, OHIO

hook, tine and scrap buckets, and snowplows.

The fuel tank has sufficient capacity to permit full 8-hour operation. *Write*: Frank G. Hough Co., Libertyville, Ill., subsidiary of International Harvester Co. *Phone*: 2-4000

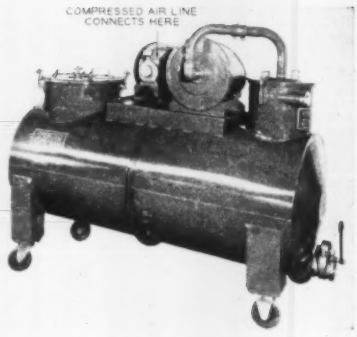
## Vacuum Moves Coolants

A vacuum unit, called Sump-Vac, for removing cutting oils and coolants from sumps of machine tools is driven by an air motor or can be powered from an 80-psi compressed air line.

The unit has a capacity of 225 gallons, has wheels for easy mobility, and a hook arrangement for attachment to in-plant trucks.

No liquid passes through the vacuum producing unit. As a result, moving parts are free from any abrasive or corrosive action of the grit and liquids being handled.

Sump-Vac, also available in 55 and 125 gallon capacities, can be provided with single or polyphase




electric motor drive. *Write*: Spencer Turbine Co., 486 New Park Ave., Hartford 6, Conn. *Phone*: Adams 3-6293

## Epoxy-Based Sealer

Homalite 345 makes permanent repairs in metals, plastics, wood, concrete, and other materials. Repaired equipment can be back in service within an hour. It will adhere to any clean, dry material. A coating of the sealer is applied to the material needing repair, a layer of glass cloth is pressed into the coating, and another coating applied on top of the glass cloth. Additional layers of glass cloth and the compound may be applied for extra strength.

It can also be used as a lining for tanks and ducts handling fluid chemicals and other corrosive materials. Its high dielectric properties make it useful for insulating, sealing and repairing cables, coils, armatures, transformers, and other electrical equipment. It is unaffected by temperatures up to 150° F and is highly resistant to impact, abrasion, and corrosion. *Write*: Homalite Corp., 15 Brookside Dr., Wilmington 4, Del. *Phone*: Olympia 2-6641

## Agent Modifies Cadmium

A leveling and grain refining agent for cadmium plating solutions has been developed to modify the grain structure of cadmium plate. This product assures uniform results with chromate conversion coatings.

It improves the throwing power of the bath, reduces burning, and gives consistent colored chromating results with iridescent or olive drab treatments. *Write*: Conversion Chemical Corp., Rockville, Conn.

"PRE-CLEANING PAYS OFF!"
WE'RE GETTING A PRETTY UNEVEN ETCH ON OUR ALUMINUM STRUCTURAL PIECES, DAVE. THE SALES DEPARTMENT IS HOWLING BECAUSE OF THE FINISH WE'RE GIVING THEM.
I RECOMMEND USING A PRE-CLEANER, DAVE. TRY RUNNING YOUR PARTS THROUGH PENNSALT CLEANER MC-I® BEFORE ETCHING. IT'S GREAT FOR SETTING UP THE SURFACE SO THAT IT'S CLEAN OF SOIL, OIL AND UNEVEN OXIDE.
THAT MEANS AN EXTRA OPERATION, JIM.
BUT IT WON'T ADD TO COST. PENNSALT CLEANER MC-I GIVES A LIGHT ETCH ITSELF. YOU CUT TIME IN THE ETCH BATH. AND YOU USE LESS ETCHANT, BECAUSE IT DOESN'T HAVE TO REMOVE SOIL.

# NEW literature

Write directly to the company for a copy

### Precision-Rolled Strip

A pamphlet, "Electronics Precision Strip Selector," is designed to help the electronic engineer select the right precision-rolled metal strip. All metals rolled down to 0.0005 in. and precision tolerances as close as ±0.001 in. are covered. Applications are given for the rarer metals now coming into prominence, such as columbium, zirconium, tantalum, and titanium. American Silver Co., 36-07 Prince St., Flushing 54, N. Y.

### Coated Pipe and Tubing

A folder, ADV.770-R, on X-Tru-Coat plastic-coated steel pipe and tubing describes the problems of pipeline corrosion. It also shows how the strength of steel and the protection of plastics have been combined to meet the requirements of the most severe corrosive applications. Advertising Div., Republic Steel Corp., Republic Bldg., Cleveland 1, Ohio.

### Dial-Type Millers

Catalog M-2003 for plain, universal, and vertical dial-type milling machines covers speed selection, feed changes, control stations, basic and automatic tables, and extra equipment. Cincinnati Milling Machine Co., Cincinnati 9, Ohio.

### Plug-in Busway

A 24-page booklet, GEA-6173, describes a 225-1000 ampere plug-in Flex-A-Power busway with aluminum conductors. Type DE is designed for indoor use as a plug-in or feeder system in industrial plants and commercial buildings. Advertising and Sales Promotion, Distribution Assemblies Dept., General Electric Co., Plainville, Conn.

### Heavy-Duty Baler

A 4-page general specification sheet and a descriptive folder on the Duomatic baler are available. Data on box dimensions, ejector, cylinders, power unit, oil reservoir, and installation and performance of the Model 260 are covered. Machine box capacity is 693.75 cu ft. Wheland Co., Chattanooga, Tenn.

### Electric Hoists

An 8-page bulletin, DH-133D, describes Speedway electric hoists with capacities of 500 to 4000 lb, equipped with solenoid motor brakes. Construction details, weights, dimensions, suspensions, specifications, clearances, accessibility, and general information for plant operators are given. Wright Hoist Div., American Chain & Cable Co. Inc., York, Pa.

### Couplings

Catalog C-210-A describes a comprehensive line of couplings. Types include diecast metals and steel; fixed bore and bushed; rigid, flexible, chain, and malleable. Browning Mfg. Co., Maysville, Ky.

### Lapping Machines

A 4-page lapping machine catalog section lists detailed data and specifications of five standard model machines. It also explains practical applications of the units for laboratory work and production. Syntron Co., 370 Lexington Ave., Homer City, Pa.

### Fire Extinguisher Systems

I-19 is an 8-page brochure on carbon dioxide fire extinguishing systems, fire detection equipment, and ultrasonic and photoelectric burglar detection systems. Portable extinguishers also are covered. Walter Kidde & Co. Inc., 675 Main St., Belleville 9, N. J.

### Material Storage

A Flow Rack brochure describes the "live storage" approach. Applications for most storage requirements are covered. Rapids-Standard Co. Inc., 342 Rapistan Bldg., Grand Rapids 2, Mich.

### Magnetic Drive

"Whitney-Tormag Magnetic Drive," an 8-page bulletin, describes a safety device for installation between machine tool and its motor. It prevents shocks and overloads. Whitney Chain Co., Hartford, Conn.

### Fork Truck Maintenance

An electric fork truck preventive maintenance chart shows 28 areas that should be inspected daily, weekly, or monthly. Dept. R8-6, Lewis-Shepard Products Inc., 125 Walnut St., Watertown 72, Mass.

WELL HERE'S A MAN WHO MIGHT HELP US . . . JIM CARLIN FROM PENNSALT. HE HELPED US SET UP OUR ETCHING SYSTEM.
I NOTICED ON MY WAY THROUGH THE SHOP THAT YOU'VE SWITCHED TO A HEAVIER GRADE OF OIL FOR DRAWING. THAT'S PROBABLY WHAT'S CAUSING THE TROUBLE. SOMETIMES, ALUMINUM HAS TO BE PRE-CLEANED OR YOU'LL GET AN UNEVEN ETCH.
WHAT WOULD YOU RECOMMEND, JIM?
LATER THAT MONTH...
HOW'S THAT FOR A SMOOTH SATIN ETCH, JIM? COMPETITION WILL HAVE TO GO SOME TO MATCH THAT.
SMOOTH AS A KITTEN'S EAR, DAVE. PENNSALT CLEANER MC-1 SURELY HELPS YOU GET A BETTER JOB OF ETCHING WITHOUT INCREASING ETCH TIME OR COST.
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Whenever metal surface preparation gives you rough problems, call your Pennsalt salesman. He can help you to "A BETTER START FOR YOUR FINISH"

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DEPARTMENT 640
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Pennsalt Chemicals
ESTABLISHED 1850

*A better start for your finish*

# NEW

and important

from J&L STRIP STEEL DIVISION

exclusive | **basic oxygen steel cold rolled strip**

## especially advantageous for deep drawing requirements

High purity, ductile, Basic Oxygen Steel is now available for the **first** time in restricted specification cold rolled strip. Low phosphorous, sulphur and nitrogen content characterize this new product. The combination of this high quality low carbon steel and the controlled processing typical of J&L's Restricted Specification Strip, results in a **new** product with many fabricating advantages. For deep drawing and intricate forming operations, superior yields and lower costs may be anticipated. The extent to which this new product may benefit your product deserves immediate investigation. Your inquiry will receive our prompt and interested attention.

STRIP STEEL

**J&L STRIP STEEL DIVISION produces a full line of restricted and standard specification strip steel in these grades and types:**

- Low Carbon
- High Carbon
- Tempered Spring Steel
- Molten Zinc Coated (JalZinc)
- Electrolytic Zinc, Tin, Copper and Brass Coated
- Alloy
- Stainless
- Painted

**Jones & Laughlin**
STEEL CORPORATION
**STRIP STEEL DIVISION**
**GENERAL OFFICES: YOUNGSTOWN 1, OHIO**

PLANTS:
YOUNGSTOWN • INDIANAPOLIS • LOS ANGELES • KENILWORTH, N. J.

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New York • Rochester • Newington, Conn. • Youngstown • Detroit
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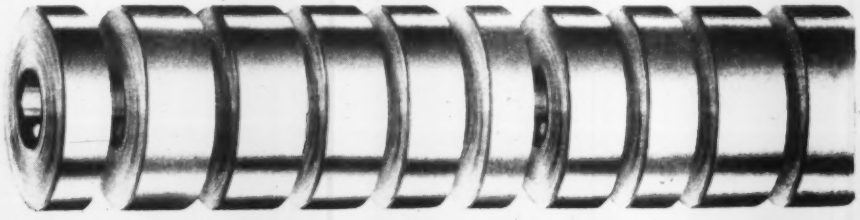
FORMERLY THE COLD METAL PRODUCTS COMPANY



# Market Outlook

CONSERVATISM is the dominant note in market appraisals being made by the steel industry's spokesmen. Production forecasts have been scaled down to 1954 size in estimates that run from 87 million to 91 million tons.

Speaking for those who expect an 87-million-ton year, Avery C. Adams, president of Jones & Laughlin Steel Corp., makes this projection for the industry: Second quarter operations will average 55 per cent of capacity, 1 point better than they were in the first period. Output will jump to 65 per cent in the third quarter, to 75 per cent in the fourth.

**GRADUAL RECOVERY**—In Mr. Adams' opinion, no upturn can be expected until consumers complete their inventory adjustments. That should happen "sometime in the second quarter." Then shipments will match consumption.

**AFTER LABOR DAY**—Taking a somewhat different view of immediate prospects, George M. Humphrey, National Steel Corp.'s chairman, says second quarter operations will probably be a little lower than those of the first three months. The third quarter is "anybody's guess," he believes, with vacations possibly slowing the inventory reduction. "As we pass Labor Day, we can look forward to greater volume."

**CITES STRONG POINTS**—Forecasting production of about 90 million tons of steel, Marcus J. Aurelius, administrative vice president of U. S. Steel Corp., looks for improvement in appliances, housing starts, farm equipment, and construction. He believes the inventory correction will have spent itself by the end of the third quarter.

**PLATE INVENTORIES HIGH**—Almost one-third of the purchasing agents participating in STEEL's quarterly inventory survey (see Page 125) think their inventories of light and heavy plates are too high. One-fourth of the buyers have too many structurals. Inventories of those products should be normal in three months.

**PROFIT SQUEEZE**—For most steelmakers, first quarter earnings reports were anything but encouraging (see Page 51). Low volume production resulted in higher costs and drastically reduced profits. Some companies lost money. Others failed to cover their dividends. When wage rates go up on July 1, steelmakers will find it hard to pass the added costs along, harder still to absorb them.

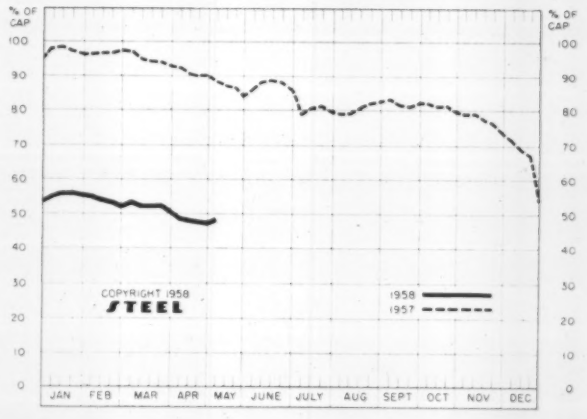
If buyers think prices are going up, they're doing nothing about it. Mills report no hedge buying, probably because inventories are too big to suit most consumers. Under present conditions, the speculative buyer is apt to pay more for borrowed money or storage than he could gain by a well-timed purchase.

**AUTOMAKERS BUY EARLY**—Detroit diemakers are hoping against hope that the automotive companies will put out programs in July.

They're in dire need of business. It's estimated that 150 to 170 small manufacturing firms in the Detroit area (mostly die and stamping shops) have gone out of business during the last six months.

**INGOT RATE IMPROVES**—After five straight weeks of declining output, the industry recorded a modest gain in steelmaking last week. Furnaces were operated at 48 per cent of capacity, up 1 point. Production was about 1,296,000 net tons of steel for ingots and castings.

## NATIONAL STEELWORKS OPERATIONS




## DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

| | Week Ended May 4 | Change | Same Week 1957 | Same Week 1956 |
|---|---|---|---|---|
| Pittsburgh | 50 | + 3* | 90.5 | 100.5 |
| Chicago | 55.5 | + 2 | 88.5 | 98 |
| Mid-Atlantic | 48 | 0 | 96 | 99 |
| Youngstown | 42 | − 2 | 86 | 97 |
| Wheeling | 57.5 | + 0.5 | 90 | 103 |
| Cleveland | 29 | − 0.5* | 85.5 | 93 |
| Buffalo | 34.5 | − 2 | 95 | 105 |
| Birmingham | 60 | + 6 | 95.5 | 23.5 |
| New England | 40 | 0 | 56 | 88 |
| Cincinnati | 29.5 | − 0.5* | 60 | 93 |
| St. Louis | 68.5 | + 12 | 90 | 94 |
| Detroit | 12 | − 1.5* | 92 | 99.5 |
| Western | 67 | 0* | 100 | 109 |
| National Rate | 48 | + 1 | 88.5 | 98.5 |

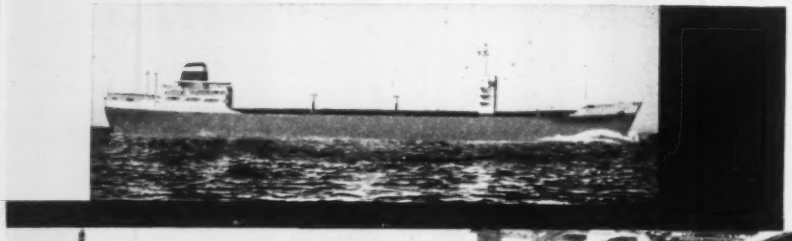
## INGOT PRODUCTION‡

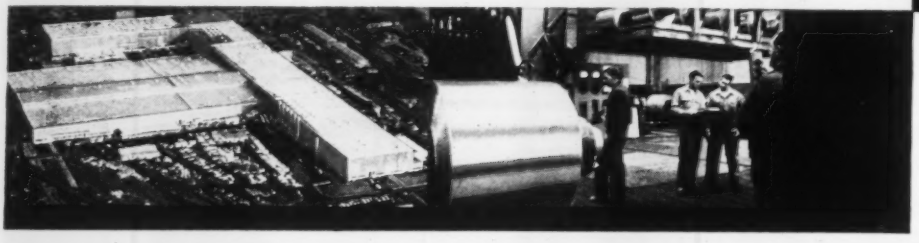
| | Week Ended May 4 | Week Ago | Month Ago | Year Ago |
|---|---|---|---|---|
| INDEX (1947-49=100) | 80.5† | 79.1 | 81.7 | 138.6 |
| NET TONS (In thousands) | 1,293† | 1,270 | 1,312 | 2,226 |

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute.
Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1958.

Metalworking Outlook—Page 45 Technical Outlook—Page 83

# Full integration makes Olin Aluminum a dependable source for you . . .





Behind every finished order of custom-tailored Olin Aluminum lies a fully-integrated chain of production facilities reaching all the way to the ore fields at Surinam.

Control over every stage of the production of your Olin Aluminum – from ore field to alumina and reduction plants, and to strategically located processing mills – assures you of a dependable source of supply. Now and tomorrow.

Of equal importance, the services of Olin Aluminum Sales Representatives, Field Engineers and Production Engineers, working in cooperation with your own staff, assure you the kind of special customer satisfaction that has been an Olin Mathieson Service principle for years.

For service now, write: Aluminum Division, Olin Mathieson Chemical Corporation, 400 Park Avenue, New York 22, New York.

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OLIN ALUMINUM

*Symbol of New Standards of Quality and Service in the Aluminum Industry*

**STEEL**
QUARTERLY SURVEY

| MILL PRODUCTS | CURRENT INVENTORIES | | | | | 3rd Quarter FORECAST | | |
|---|---|---|---|---|---|---|---|---|
| | UNDER 10 DAYS | 10-30 DAYS | 30-60 DAYS | 60-90 DAYS | 3-6 MONTHS | LOWER | SAME | HIGHER |
| HOT-ROLLED CARBON BARS | 5% | 27% | 42% | 18% | 8% | 19% | 74% | 7% |
| COLD-FINISHED BARS | 3% | 25% | 54% | 12% | 6% | 26% | 68% | 6% |
| H & C-R SHEETS, STRIP | 8% | 18% | 41% | 28% | 5% | 24% | 64% | 12% |
| LIGHT PLATES | 5% | 9% | 40% | 32% | 14% | 37% | 43% | 20% |
| HEAVY PLATES | 4% | 16% | 44% | 19% | 17% | 34% | 51% | 15% |
| STRUCTURAL SHAPES | 5% | 24% | 37% | 24% | 10% | 43% | 46% | 11% |
| COPPER & BRASS | 8% | 22% | 48% | 14% | 8% | 14% | 76% | 10% |
| ALUMINUM | 7% | 20% | 55% | 18% | — | 28% | 64% | 8% |

FIGURES are percentages of respondents to STEEL's quarterly survey.
COLOR UNDERSCORED figures show how most respondents reported.

# Buyers Say: 'We'll Cut Stocks Further'

**Many purchasing agents complain of excessive inventories as deliveries improve and metal needs decline. Stocks won't be pared to satisfactory levels until summer**

INVENTORIES are falling, but they haven't hit bottom yet. Two of every five metal buyers have what they consider to be more tonnage than they require in one or more products, STEEL's second quarter survey of metal inventories shows.

Some 40 per cent of purchasing agents qu ried by STEEL named at least one product in which supply is larger than desired. Dissatisfaction with inventories is greatest in plates and structural shapes, as the accompanying table shows.

**What's Normal?** — Buyers generally aim to keep inventories at a 30 to 60 day level. More than one-third of the buyers questioned expressed displeasure with plate and structural inventories because they hold more than two months' supply of these products. Purchasers of steel bars, copper, brass, and aluminum are cutting their holdings below the 30-day level when possible. Three months ago, 24 per cent of the users of hot-rolled bars had less than one month's inventory. Now, 32 per cent have cut stocks below that level.

The bulk of respondents say stocks will be at satisfactory levels in July. A few say August or later. Their determination to pare inventories has receded slightly since STEEL's previous survey (Feb. 3, p. 159). Then, 34 per cent of purchasers expected a decline in the ensuing quarter, and 59 per cent thought stocks would remain level. Now, 26 per cent look for a decline in the next three months, 11 per cent forecast a rise, and 63 per

## Stocks 'Too High'

(% of buyers reporting)

| | |
|---|---|
| Stainless | 4 |
| Wire | 7 |
| Welded tubes | 7 |
| Aluminum | 10 |
| Copper | 14 |
| Hot-rolled bars | 15 |
| Sheets | 17 |
| Cold-finished bars | 18 |
| Seamless tubes | 23 |
| Structural shapes | 24 |
| Light plates | 30 |
| Heavy plates | 30 |

cent think stocks will remain level.

**Still Chopping**—Inventory plans of nonferrous metal buyers are slightly more stable than those of steel buyers, but both expect continued reductions in stocks. Of aluminum, copper, and brass purchasers, 21 per cent predict a drop in inventories within the next three months, while 70 per cent say they will remain constant. Among steel buyers, 27 per cent forecast an inventory reduction, and 63 per cent believe stocks will remain level.

Purchasing agents complain that dull sales hamper reduction of inventories. A Pennsylvania buyer of plates and structurals says, "We have six months' supply of steel. With our operations low, we won't cut into inventories significantly during the summer. A fall upswing in business should bring our stocks to satisfactory levels, but this won't occur until October."

**Normal by Summer**—Despite a sprinkling of these pessimistic reports, 80 per cent of buyers who report too much steel in inventory predict satisfactory levels in the next three months. The remaining 20 per cent think inventory reductions will continue for four months or longer.

One year ago (STEEL, May 6, 1957, p. 127), 20 per cent of heavy plate users reported difficulty in obtaining enough steel, while 14 per cent of standard structural buyers mentioned supply shortages. In the current survey, not one buyer of bars, sheets, plates, structurals, or nonferrous metals is complaining of trouble in filling his needs. With no shortages likely to develop, you can expect to see the buyer remain in control of the market for steel for at least three more months.

## Steel Bars . . .

Bar Prices, Page 134

There's little change in demand for carbon and alloy merchant steel bars.

Manufacturers are still leaning heavily on inventories, and though consumption is believed to be outrunning mill shipments by a substantial margin, there are no signs of an early pickup in orders.

Buying is marked by the absence of large tonnage orders. But the frequency of orders appears to be holding at the pace of recent weeks. Availability of prompt shipments from mills encourages spot ordering.

If there is to be any hedge buying against an anticipated midyear price increase, it will have to start soon. So far, buyers have shown little interest in ordering for stock.

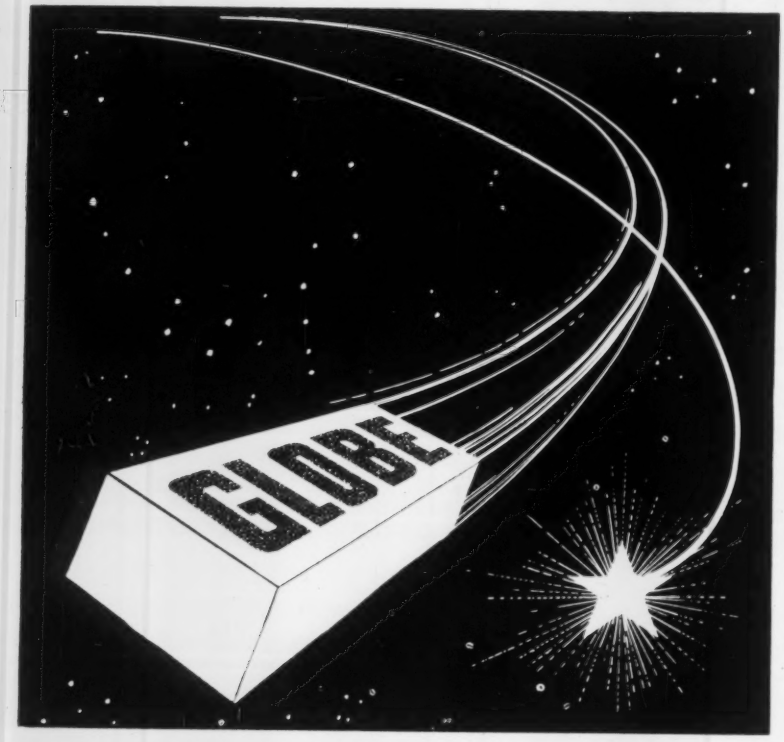
Orders from bolt and nut makers and forge shops are limited—some forge shops have a lot of sizes and grades of steel in inventory that are not suitable for current work.

Railroad buying of bars (and other steel products) is blunted by shrinking car shop operations and falling car order backlogs. Automotive demand is not expected to improve much before August.

Cold-finished bar orders are more numerous than those for hot rolled. The cold drawers are meeting demand for prompt shipments from hot bar inventories or cold drawn stocks.

In the Chicago district, April orders about equalled those placed in March, which, in turn, were behind those placed in February.

Industrywise, the farm implement makers are purchasing larger tonnages than they did a year ago.




ANY GLOBE SUPERIOR LADLE BRICK

could survive the heat that destroys a shooting star

SERVING THE STEEL INDUSTRY SINCE 1873 ★

This greater heat resistance is one of the reasons why GLOBE BRICK lasts longer. There is a type for every need of ladle lining. We offer quality and service, so help yourself to some of the wisdom we've gained in 85 years of service to the steel industry.

The GLOBE BRICK Co.
EAST LIVERPOOL, OHIO

The picture among those implement manufacturers varies—some are managing only to keep a percentage point or two ahead of last year, while others report they are up as much as 25 per cent. The Allis-Chalmers plant in Independence, Mo., is operating at near record levels.

Another busy bar-buying industry is that making auto replacement parts. The philosophy of keeping the "old buggy" running another year before buying a new one is being reflected in such products as sparkplugs, brake shoes, etc.

## Tool Steel . . .

Tool Steel Prices, Page 138

Tool steel sales are moving sidewise with little prospect for early improvement. Customers have cut their inventories to the bone and are relying on quick warehouse service. One mill says its sales are better than they were in the fourth quarter, but they are 36 per cent under the level of a year ago.

Shipments to the plastic molding, aluminum extrusion, zinc and aluminum diecasting industries are relatively good. Sales to the major manufacturers of small tools are poor.

## Plates . . .

Plate Prices, Page 134

Sluggish demand for plates contrasts strikingly with the market situation at this season a year ago. Today, consumers are well stocked; they have no trouble getting practically any tonnage for any delivery they want. A year ago, there wasn't enough material to go around, especially the heavy gages. Deliveries extended several months, and premium prices were quoted by some producers.

Requirements of shipyards and structural shops are slightly heavier in the East, but demand for plate specialties is declining, including heavy equipment weldments and industrial pressure vessels. The lack of buying by the railroad car shops is keenly felt.

Plate fabricators are doing little buying for inventory in any size range. They are well stocked on the light gages, and order the heavy gages and specialties only when they are involved in new bookings.

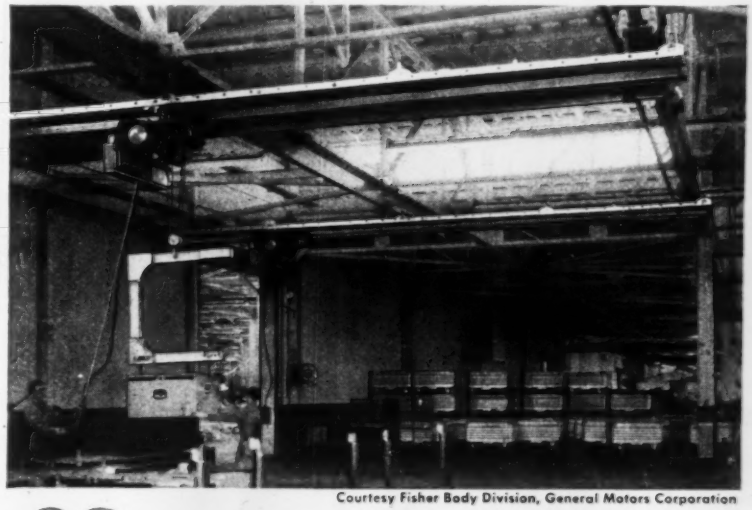
## Sheets, Strip . . .

Sheet & Strip Prices, Pages 135 & 136

Despite a minimum of inventory and price-hedge covering, flat-rolled steel orders coming in to producers from a broader range of consumers, point to a moderate increase in bookings during May. More carbon sheet and strip users are scheduling slightly heavier consumption over the next few weeks. Their current orders reflect a mild bulge in manufacturing activity.

Midwestern mills are disappointed by the failure of order bookings to reflect reported increased production by several appliance makers. Office furniture manufacturers, small tankmakers, range builders, and the construction industry are among those lines placing larger tonnages with the mills. But demand from the heavy consuming industries, notably automotive and railroad car shops, continues to lag.

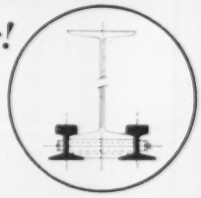
At Cleveland, sellers have received small-volume sheet orders for pilot production of 1959 model cars. Sheetmakers say the auto builders

Courtesy Fisher Body Division, General Motors Corporation

92 ABELL-HOWE CRANES

*for automobile body builder!*



Abell-Howe 10-ton crane bridges at Fisher Body are specially designed with Timken bearing equipped flat tread wheels operating on 160# ASCE crane rails fastened to lower flange of I-beam runways . . . no better design for heavy service!

Specifically, seventy 10-ton cranes, ten 5-ton cranes and twelve 2-ton cranes . . . serving the receiving, production facilities, storage, maintenance and repair, and shipping areas in two separate plants.

The entire job was completed in good order—equipment was accepted promptly upon completion, and there have been no reported cases of malfunction.

Granted, Abell-Howe does not write orders like this every day. In fact, our business has been built on the satisfaction of single crane buyers. Point is, these cranes were purchased in *quantity* simply because Abell-Howe has the quality construction as well as the conservative price!

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S-110 SINGLE GIRDER CRANES
Underhung and Top-Running models. Cap. 2,000 to 10,000 lbs.

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4 basic types to suit all building conditions. Cap. 3 to 20 tons.

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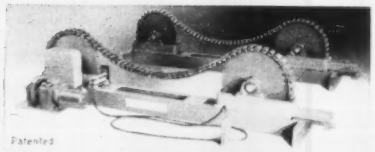

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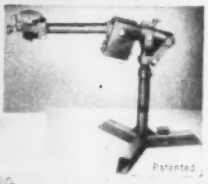
Aronson TracTred (T. M. Reg.) Turning Rolls for thin walled heavy cylindrical work to 27 tons capacity. Zero to 100 IPM turning speed and Built In Grounding.

Aronson Universal Balance Positioners (T. M. Reg.) position your weldments effectively, instantly for downhand welding. Capacities to 2000 lbs.



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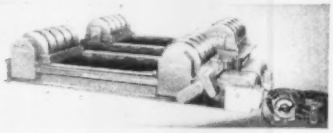

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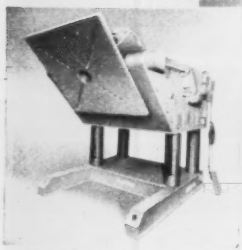
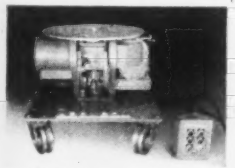
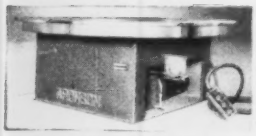


Fully Automatic Gear Driven Positioners, featuring Geared Elevation, 135° Tilting and Variable or Constant Speed Rotation. Capacities to 350,000 lbs.

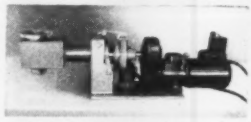


Model D Gear Driven Positioners. Compact. Precise. Rugged. Capacities to 1000 lbs.

Rugged Head and Tail Stock for positioning bulky weldments between centers. Table Backup for Zero Deflection. Magnetic Braking. Capacities to 160,000 lbs. Geared Elevation Optional.



Heavy Duty Floor Turntables with precision speed control and Magnetic Braking, used for welding, burning, X-raying, etc. Capacities to 120,000 lbs., various heights and speeds.



Bench Turntable Automatic Positioners with Mercury Grounding. Capacities to 500 lbs.

*Quality* POSITIONERS by *Aronson* MACHINE COMPANY
ARCADE, NEW YORK
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**...1¾" thru 8" BOLT DIAMETER**

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Write for our 72-page weight book containing 61 tables of weights of round, square, hexagon, octagon and flat steel bars.

**JOSEPH DYSON & SONS, INC.**
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will have to begin ordering steel from the mills late in July if they are to begin 1959 model production in September.

More orders went into books during the last week of April than in the preceding three weeks, report sellers in the Southwest. The pick-up was across the board, with warehouses taking a wider range of items.

Buffalo suppliers have been heartened by the national pickup in automobile sales, but they have yet to see any gain in orders for sheets and other steel products.

In addition to the farm trade creating a seasonal demand for galvanized sheets, one producer in the Chicago area reports his firm is getting a fair amount of orders from contractors installing air conditioning in older buildings.

## Tin Plate . . .

Tin Plate Prices, Page 136

Tin plate is still the brighest spot in the steel product market.

One midwestern executive says demand should continue its 7 per cent annual increase. But he thinks that tonnage may not reflect the growth because of the trend to lighter base metal (100 to 90 lb).

The soft drink industry is expected to take an increasingly larger tonnage.

## Reinforcing Bars . . .

Reinforcing Bar Prices, Page 134

Heavier requirements for concrete reinforcing bars are being accompanied by better buying of highway mesh. Bridges and schools account for the bulk of the increase in demand.

Fabricators of bars and structurals in the Chicago district report an upturn in estimating, most of it on small "stuff." Water tank storage for municipalities is a pretty active area in the structural market.

In New England, 5000 tons of reinforcing bars have been placed in the last few days. In the Pacific Northwest, sellers' backlogs are below normal, but commercial construction and highway projects are absorbing sizable tonnages of bars.

Mill shipments to fabricators are running three to four weeks, with mill rolling capacity and semifinished steel supplies ample without lengthening deliveries.

Wire fabric demand is expected to pick up in the Detroit area on the basis of road construction contracts recently signed in Lansing, Mich. More road contracts due to be signed in Columbus, Ohio, this week are expected to stimulate ordering. Building requirements and pipe needs are rising slowly.

## Stainless Steel . . .

Stainless Steel Prices, Page 138

Sales of stainless bars and billets are stronger at Detroit. First quarter shipments were reported a bit ahead of those in the like period a year ago, one maker reports. But there's still no activity in stainless steel tied closely to the automotive industry.

"We had no pickup in April," says a producer at Pittsburgh, "and it looks like May will be even worse."

## Canada . . .

Steel output in the first quarter of 1958 showed an improvement over that in the last quarter of 1957, H. G. Hilton, chairman, Steel Co. of Canada Ltd., Hamilton, Ont., told stockholders at the annual meeting.

"I cannot assure you this improvement will continue," he said. "It is, however, encouraging, and we are in an excellent position to profit from any general business upturn that may occur later this year."

## Warehouse . . .

Warehouse Prices, Page 139

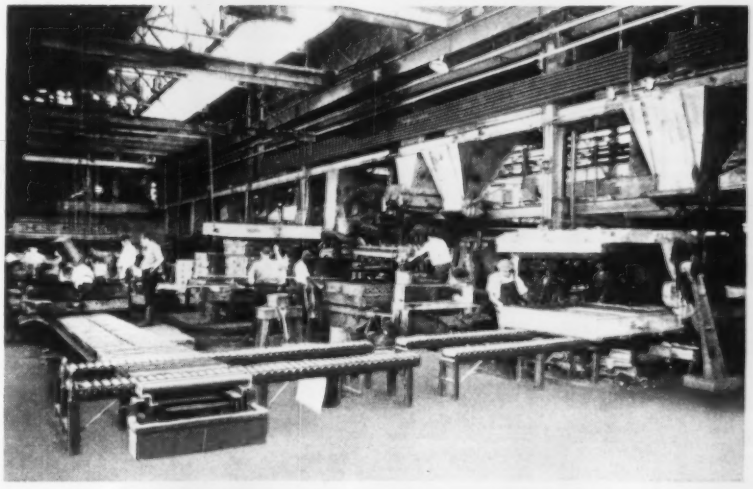
Distributors complain of slow business, despite a pickup in orders from the construction industry. Chances for improvement in overall bookings in the second quarter are not good.

Consensus among trade leaders is that the market will remain sluggish through the summer. Making a noticeable dent in warehouse business is the absence of buying by the larger customers who are getting tonnages from mills.

On a comparative basis, warehouse business so far this year has run like this: January, the best month; February, dipped perhaps 15 per cent; March, rose 10 per cent; and April, dropping to about the February level.

Some price shading has been


# Ask Standard how to cut costs with conveyors



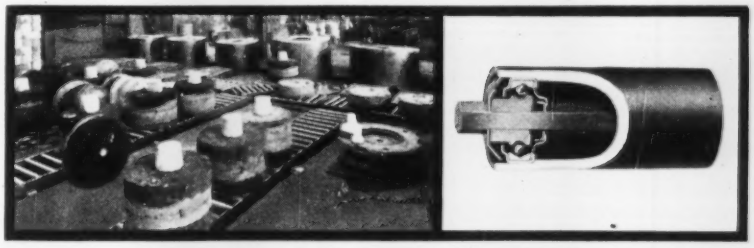
Parallel roller conveyor lines facilitate movement of large molds to pouring area. Note simple right angle transfer device.

## Job-tailored conveyor systems speed, simplify foundry work

Good foundry practice requires smooth handling of molds and cores to reduce losses due to "shifting" or "collapse".

This can be achieved with Standard Gravity Roller and Power Conveyors. Standard's *50 years experience* in engineering and manufacturing *foundry conveyors* can be valuable to you.

Before you embark on any modernization program it will pay you to call STANDARD CONVEYOR COMPANY, General Offices, North St. Paul 9, Minn. Sales and Service in Principal cities.



Steel foundries handle cumbersome molds easily on simple low cost roller conveyors. Special design shielded bearings for rough foundry use give longer life, low maintenance.

*Send for Standard's special catalog — a valuable reference book illustrating and describing various conveyor installations in leading foundries. Ask for "Conveyors for Foundries — IR." Address Dept. Y-5*

Standard 50 years of conveyor experience
GRAVITY & POWER
CONVEYORS
*Sales and Service in Principal Cities.*

# A trainee taught us some ABC's

At a briefing of trainees one of the boys asked: "Can I buy U. S. Savings Bonds through the Company and have my deductions made automatically?" Frankly we had assumed that all of our employees knew all about the Payroll Savings Plan.

As a matter of fact, we've had the Plan in operation here for years. We decided to make sure that *everyone* on our payroll got full information, right away.

Our State Savings Bond Director saw to it that we got a full stock of promotional material to stimulate interest in U. S. Savings Bonds. After that he helped us to conduct a personal canvass and give everyone an application blank.

What happened next was surprising. Our employee participation jumped to a really substantial percentage. When our people had all the facts they were glad to gain the security that U. S. Savings Bonds offer them.

Today there are more Payroll savers than ever before in peacetime. Your State Director will be happy to help you install a Payroll Savings Plan or build enrollment in one already existing. Look him up in the phone book or write: Savings Bonds Division, U. S. Treasury Dept., Washington, D. C.

**STEEL**
The Metalworking Weekly

THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTIC DONATION, THE ADVERTISING COUNCIL AND THE DONOR ABOVE.

noted in the Chicago district, chiefly by modification of extras. Some orders have been booked for 1000-lb lots, for instance, at the price published for 5000-lb lots.

Texas warehouses are finding imported steel much more than just a painful thorn in a salesman's side. Importers are making their biggest gains in the best markets—small shapes, reinforcing bars, and small sized wide flange beams.

## Structural Shapes . . .

Structural Shape Prices, Page 134

Contracts for fabricated structural steel are picking up in the East. More tonnage is being estimated, which is an encouraging development because bookings are 30 to 35 per cent under those in the first four months of last year.

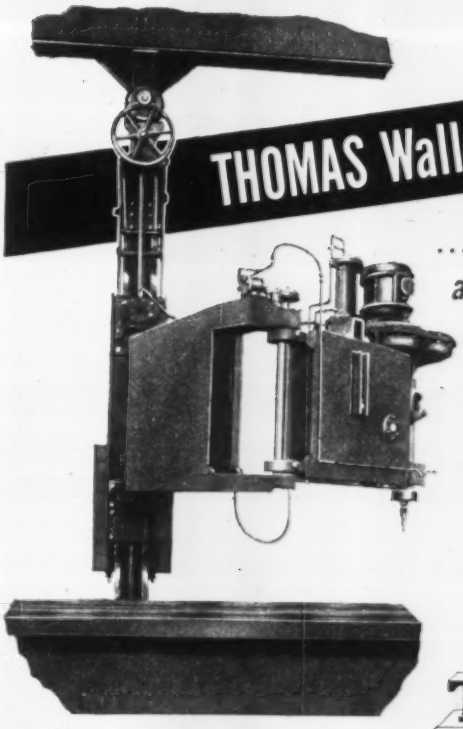
Shipments are in excess of new business, resulting in a steady drain of fabricators' backlogs. The situation is showing up in sharp competition for new jobs, including easier prices. Bridgework, accounting for the bulk of the increase in inquiry, frequently attracts bids from 35 to 40 suppliers of structural, reinforcing, piling, railing, deck, and other steel.

Reflecting the highly competitive situation on the West Coast, the U. S. Engineer at Portland, Oreg., received 54 bids for furnishing 41 steel stoplogs and lifting beams for Bonneville Dam. The low tender was by H.&S. Marine Co., Muskegon, Mich., which bid $11,326. The high bid was $56,000.

With inventory liquidation still going on, fabricating shop buying is not keeping pace with the improved demand for structurals and other building steel.

At Buffalo, the seasonal pickup in construction requirements is providing about the only bright spot in the steel market at that point. Better orders for structurals, reinforcing bars, and other types of building steel are reported.

Thousands of tons of steel are going into California's expanding highway system. In northern California alone, about $85 million in road awards is scheduled for this year. In the Pacific Northwest, Oregon takes rebids May 9 for twin highway spans across the Snake River near Ontario; the project involves 900 tons of shapes, 300 tons of reinforcing, and some piling.

THOMAS Wall Radial Drill

. . . for drilling plates, angles and beam flanges too heavy to punch

THIS new Thomas tool is a "must" for every structural fabricator who depends on production drilling. It's the Thomas Wall Radial, column-mounted . . . the handiest and most rugged tool of its kind you ever used!

Ask for Bulletin 320 now!

the trend is to THOMAS

in Punches • Shears • Presses • Spacing Tables • Benders

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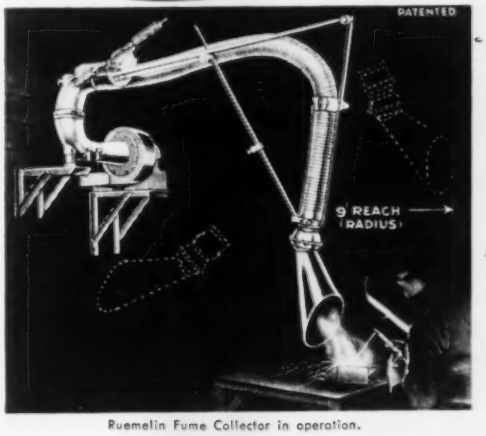
MACHINE MANUFACTURING COMPANY

PITTSBURGH 23, PA.

60

"It certainly is a relief to have fumes and heat removed while I'm welding. The Ruemelin Collector has great suction. It makes a day's work pleasanter!"




Ruemelin Fume Collector in operation.

Welding shops equipped with Ruemelin Fume Collectors are assured of a clean shop atmosphere. Noxious fumes, heat and smoke are eliminated at their source, thus improving working conditions, lessening fatigue and paving the way for increased plant production.

The Ruemelin Fume Collector hood can be instantly placed where needed anywhere in the booth welding area. No tedious adjustments necessary. Just pull the inlet hood to the welding position and you are ready to go.

Note the new spring-loaded counterbalance mechanism which makes Fume Collector much easier to handle. Ask for Bulletin 37-E illustrating this new feature.

RUEMELIN MFG. CO.

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SAND BLAST AND DUST COLLECTING EQUIPMENT

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## STRUCTURAL SHAPES . . .

### STRUCTURAL STEEL PLACED

10,400 tons, 310 miles transmission towers, Fort Peck-Bismarck, N. Dak., Bureau of Reclamation, to Lipsett, Inc., New York.

1400 tons, seven highway and one railroad grade crossings, composite I-beam structures, Rochester, N. Y., Eastern Expressway, to Ernst Iron Works, Buffalo; Lane Construction Co., Meriden, Conn., general contractor.

1065 tons, pier freight terminal, Brooklyn, N. Y., to Grand Iron Works, New York; Nadel & Baxendale Inc., New York, general contractor.

850 tons, high school, Lawrence, N. Y., to Simon Holland & Sons, Brooklyn, N. Y.; Leon D. DeMatteis Construction Co., Elmont, N. Y., general contractor.

550 tons, 12-story apartment building, 315 East 70th St., New York, to Lieb Iron Works, New York.

530 tons, building, Castle Products Co., New Brunswick, N. J., to American Bridge Div., U. S. Steel Corp., Pittsburgh; Wigton-Abbott Corp., Plainfield, N. J., general contractor.

500 tons, including bars, public health service building, Atlanta, to Steel Inc., Scottdale, Ga. (structurals) and Joseph H. Fox & Co. Inc., Birmingham (reinforcing); Henry C. Beck Co., Atlanta, general contractor.

450 tons, boiler supports, Magna, Utah, to Mosher Steel Co., Houston; Combustion Engineering Inc., New York, contractor.

295 tons, generator development building No. 22, Philadelphia, General Electric Co. to Cantley & Co. Inc., Philadelphia.

200 tons, high school, Fairfax, Va., to Ross Iron Works, Richmond; English Construction Co., Alta Vista, Va., general contractor; 50 tons, reinforcing bars, Montague-Betts Co. Inc., Lynchburg, Va.

190 tons, Greenwood substation, Consolidated Edison Corp., Brooklyn, N. Y., to Grand Iron Works, New York.

130 tons, service bridge, Thomaston Dam, Connecticut, to United Fabricators Inc., New Haven; Oneglia & Gervasini Inc., Torrington, Conn., general contractor.

120 tons, elementary school, Roxbury District, Boston, to Hub Steel & Iron Works, Boston; James S. Kelliher Co., Quincy, Mass., general contractor.

110 tons, state highway bridge, Westchester County, New York, to White Plains Iron Works, White Plains, N. Y.

110 tons, terminal building, Jenney Mfg. Co., Chelsea, Mass., to A. O. Wilson Structural Co., Cambridge, Mass.

105 tons, state highway bridge FESS 58-18, Putnam County, New York, to Bethlehem Steel Co., Bethlehem, Pa.

100 tons, Pierce Island Bridge, Portsmouth, N. H., to Builders Iron Works, Somerville, Mass.

### STRUCTURAL STEEL PENDING

3650 tons, (3215 tons girder spans) three grade separations and railroad bridge, relocation Route 35, New Haven, Conn.; Mariani Construction Co. Inc., New Haven, low, general contractor; also 615 tons, reinforcing bars and 300 tons, steel piles.

2700 tons, office building and post office, University Properties, Seattle; bids in.

2410 tons, state highway bridges, including two plate girder structures, Stroudsburg, Pa.; bids May 9, Harrisburg, Pa.

2000 tons, hangar 17, Idlewild Airport, Port of New York Authority, White Plains Iron Works, White Plains, N. Y., low.

975 tons, six state highway bridges, Wilmington, Mass.; Campanella & Cardi Construction Co., Hillsgrove, R. I., low, general contract.

900 tons, also 300 tons of reinforcing and piling, twin bridges, Snake River, Oregon; bids to Portland, Oreg., May 9.

600 tons, 9-span steel stringer bridges (viaduct), North Adams, Mass.

200 tons, state highway bridges, Summit-Greene-Mill Creek townships, Pa.; bids May 9, Harrisburg, Pa.

150 tons, T-sections, General Stores Supply, Navy, Philadelphia; bids May 9.

115 tons, state highway bridges, I-beam, Greencastle-Mercersburg, Pa.; bids May 9 Harrisburg, Pa.; also 30 tons, reinforcing bars.

## REINFORCING BARS . . .

### REINFORCING BARS PLACED

1400 tons, elevated structures, Section P, J. F. Fitzgerald Expressway, Boston, to Truscon Steel Div., Republic Steel Corp., Boston; M. DeMatteo Construction Co., Quincy, Mass., general contractor.

760 tons, viaduct structures, FICBE 58-2, Contract 6, Cross Bronx Parkway, Bronx, N. Y., to Capitol Steel Co., New York; Slattery Contracting Co. Inc., Maspeth, N. Y., general contractor.

650 tons, hospital building, Worcester, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Park Construction Co., Boston, general contractor.

640 tons, state highway structures, Route 128, Braintree - Quincy - Randolph - Milton section, Massachusetts, to Northern Steel Inc., Medford, Mass.; Marinucci Bros. & Co. Inc., Boston, general contractor.

630 tons, state highway department building, Baton Rouge, La., to Southwest Steel Products Co., Kenner, La.; George A. Caldwell Construction Co., Baton Rouge, general contractor; 40 tons, structurals, Cosco Building Products, Baton Rouge.

500 tons, including structurals, men's dormitory, University of Cincinnati, Cincinnati, to Joseph T. Ryerson & Son Inc., Chicago, (reinforcing bars) and Engineering Metal Products Corp. (structurals); Frank Messer Inc., Cincinnati, general contractor.

380 tons, high school, Lawrence, N. Y., to United States Steel Supply Div., U. S. Steel Corp., New York; Leon D. DeMatteis Construction Co., Elmont, N. Y., general contractor.

345 tons, parochial high school, Peabody, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; G. L. Rugo Co., Boston, general contractor.

220 tons, buildings, Merrimack College, North Andover, Mass., to Northern Steel Inc., Medford, Mass.; P. F. Beresford Co., Medford, Mass., general contractor.

258 tons, nuclear heat and power plant, Ft. Greely, Big Delta, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; general contract to Peter Kiewit Sons Co., low at $4,597,217.

200 tons, elementary school, Roxbury District, Boston, to United States Supply Div., U. S. Steel Corp., Boston; James S. Kelliher Co., Quincy, Mass., general contractor.

200 tons, Hanford Works project, to Soule Steel Co., Seattle; John P. Hopkins Co. Inc., Mercer Island, general contractor.

130 tons, language center building, Vassar College, Poughkeepsie, N. Y., to Fireproof Products, Inc., New York; Campbell Building Co., Poughkeepsie, general contractor.

75 tons, Everett Herald plant, Everett, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; George Teufel Co., Seattle, general contractor.

### REINFORCING BARS PENDING

1250 tons, including 625 tons mesh, reinforced concrete highway and bridges, route L.R. 797 (7), Erie County, Pennsylvania; bids May 9, Harrisburg, Pa.

1145 tons, including 450 tons mesh, reinforced concrete highway and bridges, Stroudsburg-East Stroudsburg, Pa.; bids May 9, Harrisburg, Pa.

845 tons, highway and bridges, Route 101, section 2C, Morris County, New Jersey; bids May 13, Trenton, N. J.; also 85 tons, structural steel bearings.

365 tons, Tukey's Bridge, Portland, Maine; also 520 tons, steel H-piles and 1200 tons fabricated structural steel.

250 tons, reinforced concrete arch bridge, Potash Brook, Russell, Mass.

140 tons, flood control structures, near Webster Square, Worcester, Mass.; Civitarese-Pistelli Construction Co., Hyde Park, Mass., low, general contract.

100 tons, flood control structures, Hammond-Cold Spring Brooks, Newton, Mass.

30 tons, also railing and miscellaneous, Skykomish River bridge, Washington state; general contract to Rasmussen Bros., Everett, Wash., by U. S. Forest Service.

Unstated, twin spans, 981 ft long, Idaho state; bids to Boise, Idaho, May 13.

Unstated, library building, Eugene, Oreg., general contract to Gale Roberts Construction Co., Eugene, low at $394,358.

Unstated, three ammunition magazines and facilities, Glasgow Air Base, Montana, Sound Construction Co., Seattle, low at $443,423 to U. S. Engineer, Walla Walla, Wash.

Unstated, 364-ft highway pass, Portland Expressway; bids to Highway Commission, Portland, Oreg., May 9.

Unstated, 13 buildings, Camp Adair, Oreg., M. H. Shields, Eugene, Oreg., low at $1,924,384 to U. S. Engineer, Portland, Oreg.

Unstated, apron extension, Larson Air Field, Washington state; N. Florito Co. Inc., Seattle, low at $1,173,985 to U. S. Engineer, Walla Walla, Wash.

## PLATES . . .

### PLATES PLACED

2140 tons, naval shipyard, Portsmouth, N. H., to the Lukens Steel Co., Coatesville, Pa. (1095 tons) and U. S. Steel Corp., Pittsburgh (1045 tons).

700 tons, General Stores Supply, Navy, Philadelphia, to the U. S. Steel Corp., Pittsburgh (230 tons), Kaiser Steel Co., New York (265 tons), and Bethlehem Steel Co., Bethlehem, Pa. (204 tons).

610 tons, 200,000 bbl. tanks, Paragon Oil Co., Newark, N. J., to Hammond Iron Works, Warren, Pa.

200 tons, molasses tank, Charles Pfizer & Co. Inc., Groton, Conn., to the Chicago Bridge & Iron Co., Chicago.

150 tons, five propane tanks, Connecticut Light & Power Co., Norwalk, Conn., to Norwalk Tank Co., Norwalk, Conn.

100 tons or more, two 200,000-gal standpipes for Pullman, Wash., reported placed with Hammond Iron Works, Provo, Utah.

100 tons, tank, Connecticut Light & Power Co., Vernon, Conn., to Chicago Bridge & Iron Co., Chicago.

### PLATES PENDING

850 tons, 30-in. ½-in. thickness water pipe, bids to Port Townsend, Wash., May 6.

500 tons or more, four fuel tanks, Adak, Alaska, base; P.O.L. Contractors, Anchorage, Alaska, low at $1,266,571 to 17th Naval District.

150 tons, medium black hull plates, General Stores Supply, Navy, Philadelphia.

135 tons, fuel oil tank, missile facility, AFB, Presque Isle, Maine; bids May 14, U. S. Engineer, Boston.

100 tons, self-propelled steel hull survey barge; U. S. Engineer, Boston.

Unstated, refueling system, pumphouse, storage tanks, etc., Larson Air Base; Leslie Miller Inc., Ft. Worth, Tex., low at $1,446,184 to U. S. Engineer, Walla Walla, Wash.

Unstated, fuel storage, etc., Kingsley Air Base, Klamath Falls, Oreg.; general contract to Lloyd Johnson Co. and Morrison Knudsen Co., joint, low, to 13th Naval District.

## PIPE . . .

### CAST IRON PIPE PENDING

1400 tons, King County District No. 93, Mercer Island, Wash.; bids May 5; Carey & Kramer, Seattle, engineer.

Unstated, 15,100 ft of 10 to 6 in., fittings and utilities, Mountain Home, Idaho; bids to U. S. Engineer, Walla Walla, Wash., May 20.

Unstated, 3500 ft, 6 in. and fittings; bids to Port Orchard, Wash., Apr. 28.

## RAILS, CARS . . .

### RAILROAD CARS PLACED

Florida East Coast, five 50-ton bulkhead flatcars to Thrall Car Mfg. Co., Chicago Heights, Ill.

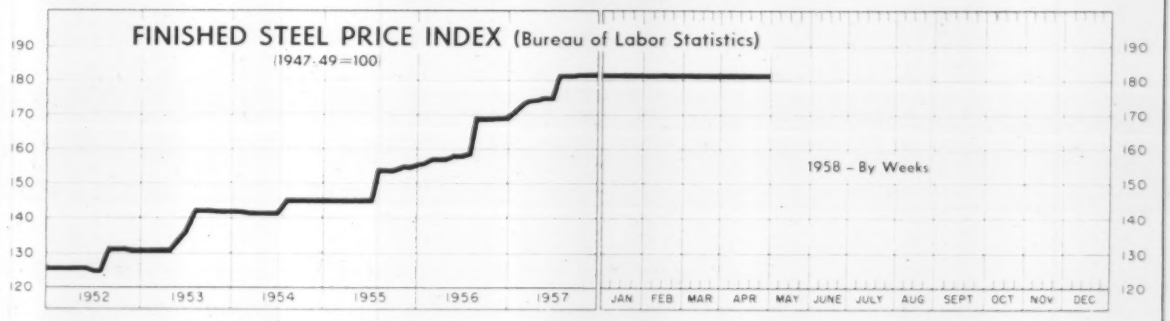
Northern Pacific, 25 forty-ft mechanical refrigerator cars to Pacific Car & Foundry Co., Renton, Wash.

Norfolk & Western, 25 fifty-ton boxcars to Pullman-Standard Car & Mfg. Co., Chicago.

Arthur Equipment Co., 15 seventy-ton hoppers to Thrall Car Mfg. Co., Chicago Heights, Ill.

New England Transportation Co. (New Haven), 50 thirty-five-ft tandem trailers, piggyback operations, to Highway Trailer Co., Allston, Mass.

# Price Indexes and Composites




| Apr. 29, 1958 | Week Ago | Month Ago | Mar. Avg | Year Ago |
|---|---|---|---|---|
| 181.6 | 181.6 | 181.6 | 181.6 | 174.5 |

## AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Apr. 29

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

| | | | |
|---|---|---|---|
| Rails, Standard No. 1 | $5.600 | Bars, Reinforcing | 6.135 |
| Rails, Light, 40 lb | 7.067 | Bars, C.F., Carbon | 10.360 |
| Tie Plates | 6.600 | Bars, C.F., Alloy | 13.875 |
| Axles, Railway | 9.825 | Bars, C.F., Stainless, 302 (lb) | 0.553 |
| Wheels, Freight Car, 33 in. (per wheel) | 60.000 | Sheets, H.R., Carbon | 6.192 |
| Plates, Carbon | 6.150 | Sheets, C.R., Carbon | 7.089 |
| Structural Shapes | 5.942 | Sheets, Galvanized | 8.270 |
| Bars, Tool Steel, Carbon (lb) | 0.535 | Sheets, C.R., Stainless, 302 (lb) | 0.688 |
| Bars, Tool Steel, Alloy, Oil Hardening Die (lb) | 0.650 | Sheets, Electrical | 12.025 |
| Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb) | 1.355 | Strip, C.R., Carbon | 9.243 |
| Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb) | 1.850 | Strip, C.R., Stainless, 430 (lb) | 0.493 |
| Bars, H.R., Alloy | 10.525 | Strip, H.R., Carbon | 6.095 |
| Bars, H.R., Stainless, 303 (lb) | 0.525 | Pipe, Black, Buttweld (100 ft) | 19.814 |
| Bars, H.R., Carbon | 6.425 | Pipe, Galv., Buttweld (100 ft) | 23.264 |
| | | Pipe, Line (100 ft) | 199.023 |
| | | Casing, Oil Well, Carbon (100 ft) | 194.499 |
| | | Casing, Oil Well, Alloy (100 ft) | 304.610 |
| | | Tubes, Boiler (100 ft) | 49.130 |
| | | Tubing, Mechanical, Carbon (100 ft) | 24.953 |
| | | Tubing, Mechanical, Stainless, 304 (100 ft) | 205.608 |
| | | Tin Plate, Hot-dipped, 1.25 lb (95 lb base box) | 9.783 |
| | | Tin Plate, Electrolytic, 0.25 lb (95 lb base box) | 8.483 |
| | | Black Plate, Canmaking Quality (95 lb base box) | 7.583 |
| | | Wire, Drawn, Carbon | 10.225 |
| | | Wire, Drawn, Stainless, 430 (lb) | 0.653 |
| | | Bale Ties (bundles) | 7.967 |
| | | Nails, Wire, 8d Common | 9.828 |
| | | Wire, Barbed (80-rod spool) | 8.719 |
| | | Woven Wire Fence (20-rod roll) | 21.737 |

## STEEL's FINISHED STEEL PRICE INDEX*

| | Apr. 30 1958 | Week Ago | Month Ago | Year Ago | 5 Yr Ago |
|---|---|---|---|---|---|
| Index (1935-39 avg=100) | 239.15 | 239.15 | 239.15 | 228.59 | 181.31 |
| Index in cents per lb | 6.479 | 6.479 | 6.479 | 6.193 | 4.912 |

## STEEL's ARITHMETICAL PRICE COMPOSITES*

| | | | | | |
|---|---|---|---|---|---|
| Finished Steel, NT | $145.42 | $145.42 | $145.42 | $140.24 | $110.98 |
| No. 2 Fdry Pig Iron, GT | 66.49 | 66.49 | 66.49 | 64.70 | 55.04 |
| Basic Pig Iron, GT | 65.99 | 65.99 | 65.99 | 64.23 | 54.66 |
| Malleable Pig Iron, GT | 67.27 | 67.27 | 67.27 | 65.77 | 55.77 |
| Steelmaking Scrap, GT | 31.83 | 32.83 | 34.33 | 43.67 | 41.67 |

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

# Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

## FINISHED STEEL

| | Apr. 30 1958 | Week Ago | Month Ago | Year Ago | 5 Yr Ago |
|---|---|---|---|---|---|
| Bars, H.R., Pittsburgh | 5.425 | 5.425 | 5.425 | 5.075 | 3.95 |
| Bars, H.R., Chicago | 5.425 | 5.425 | 5.425 | 5.075 | 3.95 |
| Bars, H.R., deld. Philadelphia | 5.725 | 5.725 | 5.725 | 5.365 | 4.502 |
| Bars, C.F., Pittsburgh | 7.30* | 7.30* | 7.30* | 6.85* | 4.925 |
| Shapes, Std., Pittsburgh | 5.275 | 5.275 | 5.275 | 5.00 | 3.85 |
| Shapes, Std., Chicago | 5.275 | 5.275 | 5.275 | 5.00 | 3.85 |
| Shapes, deld., Philadelphia | 5.545 | 5.545 | 5.545 | 5.31 | 4.13 |
| Plates, Pittsburgh | 5.10 | 5.10 | 5.10 | 4.85 | 3.90 |
| Plates, Chicago | 5.10 | 5.10 | 5.10 | 4.85 | 3.90 |
| Plates, Coatesville, Pa. | 5.10 | 5.10 | 5.10 | 5.25 | 4.35 |
| Plates, Sparrows Point, Md. | 5.10 | 5.10 | 5.10 | 4.85 | 3.90 |
| Plates, Claymont, Del. | 5.10 | 5.10 | 5.10 | 5.70 | 4.35 |
| Sheets, H.R., Pittsburgh | 4.925 | 4.925 | 4.925 | 4.675 | 3.775 |
| Sheets, H.R., Chicago | 4.925 | 4.925 | 4.925 | 4.675 | 3.775 |
| Sheets, C.R., Pittsburgh | 6.05 | 6.05 | 6.05 | 5.75 | 4.575 |
| Sheets, C.R., Chicago | 6.05 | 6.05 | 6.05 | 5.75 | 4.575 |
| Sheets, C.R., Detroit | 6.05-6.15 | 6.05-6.15 | 6.05-6.15 | 5.75-5.85 | 4.775 |
| Sheets, Galv., Pittsburgh | 6.60 | 6.60 | 6.60 | 6.30 | 5.075 |
| Strip, H.R., Pittsburgh | 4.925 | 4.925 | 4.925 | 4.675 | 3.975-4.225 |
| Strip, H.R., Chicago | 4.925 | 4.925 | 4.925 | 4.675 | 3.725 |
| Strip, C.R., Pittsburgh | 7.15 | 7.15 | 7.15 | 6.85 | 5.10-5.80 |
| Strip, C.R., Chicago | 7.15 | 7.15 | 7.15 | 6.85 | 5.35 |
| Strip, C.R., Detroit | 7.25 | 7.25 | 7.25 | 6.95 | 5.30-6.05 |
| Wire, Basic, Pittsburgh | 7.65 | 7.65 | 7.65 | 7.20 | 5.225-5.475 |
| Nails, Wire, Pittsburgh | 8.95 | 8.95 | 8.95 | 8.49 | 6.35 |
| Tin plate (1.50 lb) box, Pitts. | $10.30 | $10.30 | $10.30 | $10.30 | $8.95 |

*Including 0.35c for special quality.

## SEMIFINISHED STEEL

| | | | | | |
|---|---|---|---|---|---|
| Billets, forging, Pitts. (NT) | $96.00 | $96.00 | $96.00 | $91.50 | $70.50 |
| Wire rods, 1/2-5/8" Pitts. | 6.15 | 6.15 | 6.15 | 5.80 | 4.425 |

## PIG IRON, Gross Ton

| | Apr. 30 1958 | Week Ago | Month Ago | Year Ago | 5 Yr Ago |
|---|---|---|---|---|---|
| Bessemer, Pitts. | $67.00 | $67.00 | $67.00 | $65.50 | $55.50 |
| Basic, Valley | 66.00 | 66.00 | 66.00 | 64.50 | 54.50 |
| Basic, deld., Phila. | 70.41 | 70.41 | 70.41 | 68.38 | 59.25 |
| No. 2 Fdry, Neville Island, Pa. | 66.50 | 66.50 | 66.50 | 65.00 | 55.00 |
| No. 2 Fdry, Chicago | 66.50 | 66.50 | 66.50 | 65.00 | 55.00 |
| No. 2 Fdry, deld., Phila. | 70.91 | 70.91 | 70.91 | 68.88 | 59.75 |
| No. 2 Fdry, Birm. | 62.50 | 62.50 | 62.50 | 59.00 | 51.38 |
| No. 2 Fdry (Birm.) deld. Cin. | 70.20 | 70.20 | 70.20 | 66.70 | 58.93 |
| Malleable, Valley | 66.50 | 66.50 | 66.50 | 65.00 | 55.00 |
| Malleable, Chicago | 66.50 | 66.50 | 66.50 | 65.00 | 55.00 |
| Ferromanganese, Duquesne | 245.00† | 245.00† | 245.00† | 255.00† | 228.00* |

†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

## SCRAP, Gross Ton (Including broker's commission)

| | | | | | |
|---|---|---|---|---|---|
| No. 1 Heavy Melt, Pittsburgh | $31.50 | $32.50 | $33.50 | $41.50 | $43.00 |
| No. 1 Heavy Melt, E. Pa. | 34.50 | 36.00 | 38.50 | 48.00 | 42.50 |
| No. 1 Heavy Melt, Chicago | 29.50 | 30.00 | 31.00 | 39.50 | 39.50 |
| No. 1 Heavy Melt, Valley | 32.50 | 32.50 | 33.50 | 41.50 | 43.50 |
| No. 1 Heavy Melt, Cleve. | 29.50 | 29.50 | 30.50 | 38.50 | 41.25 |
| No. 1 Heavy Melt, Buffalo | 26.50 | 26.50 | 28.50 | 41.50 | 43.50 |
| Rails, Rerolling, Chicago | 48.50 | 52.00 | 54.50 | 56.50 | 51.50 |
| No. 1 Cast, Chicago | 38.50 | 38.50 | 41.50 | 39.50 | 42.50 |

## COKE, Net Ton

| | | | | | |
|---|---|---|---|---|---|
| Beehive, Furn., Connlsvl. | $15.25 | $15.25 | $15.25 | $15.25 | $14.75 |
| Beehive, Fdry., Connlsvl. | 18.25 | 18.25 | 18.25 | 18.00 | 17.00 |

# Steel Prices

Mill prices as reported to STEEL, Apr. 30, cents per pound except as otherwise noted. *Changes shown in italics.* Code numbers following mill points indicate producing company. Key to producers, page 135 to footnotes, page 137.

## SEMIFINISHED

**INGOTS, Carbon, Forging (NT)**

Munhall,Pa. U5 ..... $73.50

**INGOTS, Alloy (NT)**

Detroit S41 ..... $77.00
Farrell,Pa. S3 ..... 77.00
Lowellville,O. S3 ..... 77.00
Midland,Pa. C18 ..... 77.00
Munhall,Pa. U5 ..... 77.00
Sharon,Pa. S3 ..... 77.00

**BILLETS, BLOOMS & SLABS**
**Carbon, Rerolling (NT)**

Bessemer,Pa. U5 ..... $77.50
Buffalo R2 ..... 77.50
Clairton,Pa. U5 ..... 77.50
Ensley,Ala. T2 ..... 77.50
Fairfield,Ala. T2 ..... 77.50
Fontana,Calif. K1 ..... 88.00
Gary,Ind. U5 ..... 77.50
Johnstown,Pa. B3 ..... 77.50
Lackawanna,N.Y. B2 ..... 77.50
Munhall,Pa. U5 ..... 77.50
Owensboro,Ky. G8 ..... 77.50
S.Chicago,Ill. R2, U5 ..... 77.50
S.Duquesne,Pa. U5 ..... 77.50
Sterling,Ill. N15 ..... 77.50
Youngstown R2 ..... 77.50

**Carbon, Forging (NT)**

Bessemer,Pa. U5 ..... $96.00
Buffalo R2 ..... 96.00
Canton,O. R2 ..... 98.50
Clairton,Pa. U5 ..... 96.00
Conshohocken,Pa. A3 ..... 101.00
Ensley,Ala. T2 ..... 96.00
Fairfield,Ala. T2 ..... 96.00
Fontana,Calif. K1 ..... 105.50
Gary,Ind. U5 ..... 96.00
Geneva,Utah C11 ..... 96.00
Houston S5 ..... 101.00
Johnstown,Pa. B2 ..... 96.00
Lackawanna,N.Y. B2 ..... 96.00
LosAngeles B3 ..... 105.50
Midland,Pa. C18 ..... 96.00
Munhall,Pa. U5 ..... 96.00
Owensboro,Ky. G8 ..... 96.00
Seattle B3 ..... 109.50
Sharon,Pa. S3 ..... 96.00
S.Chicago R2, U5, W14 ..... 96.00
S.Duquesne,Pa. U5 ..... 96.00
S.SanFrancisco B3 ..... 105.50
Warren,O. C17 ..... 96.00

**Alloy, Forging (NT)**

Bethlehem,Pa. B2 ..... $114.00
Bridgeport,Conn. C32 ..... 114.00
Buffalo R2 ..... 114.00
Canton,O. R2, T7 ..... 114.00
Conshohocken,Pa. A3 ..... 121.00
Detroit S41 ..... 114.00
Economy,Pa. B14 ..... 114.00
Farrell,Pa. S3 ..... 114.00
Fontana,Calif. K1 ..... 135.00
Gary,Ind. U5 ..... 114.00
Houston S5 ..... 119.00
Ind.Harbor,Ind. Y1 ..... 114.00
Johnstown,Pa. B2 ..... 114.00
Lackawanna,N.Y. B2 ..... 114.00
LosAngeles B3 ..... 134.00
Lowellville,O. S3 ..... 114.00
Massillon,O. R2 ..... 114.00
Midland,Pa. C18 ..... 114.00
Munhall,Pa. U5 ..... 114.00
Owensboro,Ky. G8 ..... 114.00
Sharon,Pa. S3 ..... 114.00
S.Chicago R2,U5,W14 ..... 114.00
S.Duquesne,Pa. U5 ..... 114.00
Struthers,O. Y1 ..... 114.00
Warren,O. C17 ..... 114.00

**ROUNDS, SEAMLESS TUBE (NT)**

Buffalo R2 ..... $117.50
Canton,O. R2 ..... 120.00
Cleveland R2 ..... 117.50
Gary,Ind. U5 ..... 117.50
S.Chicago,Ill. R2, W14 ..... 117.50
S.Duquesne,Pa. U5 ..... 117.50
Warren,O. C17 ..... 117.50

**SKELP**

Aliquippa,Pa. J5 ..... 5.075
Munhall,Pa. U5 ..... 4.875
Pittsburgh J5 ..... 5.075
Warren,O. R2 ..... 4.875
Youngstown R2, U5 ..... 4.875

**WIRE RODS**

AlabamaCity,Ala. R2 ..... 6.15
Aliquippa,Pa. J5 ..... 6.15
Alton,Ill. L1 ..... 6.35
Buffalo W12 ..... 6.15
Cleveland A7 ..... 6.15
Donora,Pa. A7 ..... 6.15
Fairfield,Ala. T2 ..... 6.15
Houston S5 ..... 6.40
IndianaHarbor,Ind. Y1 ..... 6.15
Johnstown,Pa. B2 ..... 6.15
Joliet,Ill. A7 ..... 6.15
KansasCity,Mo. S5 ..... 6.40
Kokomo,Ind. C16 ..... 6.25
LosAngeles B3 ..... 6.95
Minnequa,Colo. C10 ..... 6.40
Monessen,Pa. P7 ..... 6.15
N.Tonawanda,N.Y. B11 ..... 6.15
Pittsburg,Calif. C11 ..... 6.95
Portsmouth,O. P12 ..... 6.15
Roebling,N.J. R5 ..... 6.25
S.Chicago,Ill. R2 ..... 6.15
SparrowsPoint,Md. B2 ..... 6.25
Sterling,Ill.(1) N15 ..... 6.15
Sterling,Ill. N15 ..... 6.25
Struthers,O. Y1 ..... 6.15
Worcester,Mass. A7 ..... 6.45

## STRUCTURALS

**Carbon Steel Std. Shapes**

AlabamaCity,Ala. R2 ..... 5.275
Atlanta A11 ..... 5.475
Aliquippa,Pa. J5 ..... 5.275
Bessemer,Ala. T2 ..... 5.275
Bethlehem,Pa. B2 ..... 5.325
Birmingham C15 ..... 5.275
Clairton,Pa. U5 ..... 5.275
Fairfield,Ala. T2 ..... 5.275
Fontana,Calif. K1 ..... 6.075
Gary,Ind. U5 ..... 5.275
Geneva,Utah C11 ..... 5.275
Houston S5 ..... 5.375
Ind.Harbor,Ind. I-2 ..... 5.275
Johnstown,Pa. B2 ..... 5.325
Joliet,Ill. P22 ..... 5.275
KansasCity,Mo. S5 ..... 5.375
Lackawanna,N.Y. B2 ..... 5.325
LosAngeles B3 ..... 5.975
Minnequa,Colo. C10 ..... 5.575
Munhall,Pa. U5 ..... 5.275
Niles,Calif. P1 ..... 5.925
Phoenixville,Pa. P4 ..... 5.325
Portland,Oreg. O4 ..... 6.025
Seattle B3 ..... 6.025
S.Chicago,Ill. U5, W14 ..... 5.275
S.SanFrancisco B3 ..... 5.925
Sterling,Ill. N15 ..... 5.275
Torrance,Calif. C11 ..... 5.975
Weirton,W.Va. W6 ..... 5.275

**Wide Flange**

Bethlehem,Pa. B2 ..... 5.325
Clairton,Pa. U5 ..... 5.275
Fontana,Calif. K1 ..... 6.225
IndianaHarbor,Ind. I-2 ..... 5.275
Lackawanna,N.Y. B2 ..... 5.325
Munhall,Pa. U5 ..... 5.275
Phoenixville,Pa. P4 ..... 5.325
S.Chicago,Ill. U5 ..... 5.275
Weirton,W.Va. W6 ..... 5.275

**Alloy Std. Shapes**

Aliquippa,Pa. J5 ..... 6.55
Clairton,Pa. U5 ..... 6.55
Gary,Ind. U5 ..... 6.55
Houston S5 ..... 6.65
KansasCity,Mo. S5 ..... 6.65
Munhall,Pa. U5 ..... 6.55
S.Chicago,Ill. U5 ..... 6.55

**H.S., L.A. Std. Shapes**

Aliquippa,Pa. J5 ..... 7.75
Bessemer,Ala. T2 ..... 7.75
Bethlehem,Pa. B2 ..... 7.80
Clairton,Pa. U5 ..... 7.75
Fairfield,Ala. T2 ..... 7.75
Fontana,Calif. K1 ..... 8.55
Gary,Ind. U5 ..... 7.75
Geneva,Utah C11 ..... 7.75
Houston S5 ..... 7.85
Ind.Harbor,Ind. I-2, Y1 ..... 7.75
Johnstown,Pa. B2 ..... 7.80
KansasCity,Mo. S5 ..... 7.85
Lackawanna,N.Y. B2 ..... 7.80
LosAngeles B3 ..... 8.45
Munhall,Pa. U5 ..... 7.75
Seattle B3 ..... 8.50
S.Chicago,Ill. U5, W14 ..... 7.75
S.SanFrancisco B3 ..... 8.40
Struthers,O. Y1 ..... 7.75

**H.S., L.A. Wide Flange**

Bethlehem,Pa. B2 ..... 7.80
Lackawanna,N.Y. B2 ..... 7.80
Munhall,Pa. U5 ..... 7.75
S.Chicago,Ill. U5 ..... 7.75

## PILING

**BEARING PILES**

Bethlehem,Pa. B2 ..... 5.325
Lackawanna,N.Y. B2 ..... 5.325
Munhall,Pa. U5 ..... 5.275
S.Chicago,Ill. U5 ..... 5.275

**STEEL SHEET PILING**

Lackawanna,N.Y. B2 ..... 6.225
Munhall,Pa. U5 ..... 6.225
S.Chicago,Ill. U5 ..... 6.225
Weirton,W.Va. W6 ..... 6.225

## PLATES

**PLATES, Carbon Steel**

AlabamaCity,Ala. R2 ..... 5.10
Aliquippa,Pa. J5 ..... 5.10
Ashland,Ky.(15) A10 ..... 5.30
Atlanta A11 ..... 5.30
Bessemer,Ala. T2 ..... 5.10
Clairton,Pa. U5 ..... 5.10
Claymont,Del. C22 ..... 5.10
Cleveland J5, R2 ..... 5.20
Coatesville,Pa. L7 ..... 5.10
Conshohocken,Pa. A3 ..... 5.20
Ecorse,Mich. G5 ..... 5.20
Fairfield,Ala. T2 ..... 5.10
Fontana,Calif.(30) K1 ..... 5.90
Gary,Ind. U5 ..... 5.10
Geneva,Utah C11 ..... 5.10
GraniteCity,Ill. G4 ..... 5.30
Harrisburg,Pa. P4 ..... 5.10
Houston S5 ..... 5.20
Ind.Harbor,Ind. I-2, Y1 ..... 5.10
Johnstown,Pa. B2 ..... 5.10
Lackawanna,N.Y. B2 ..... 5.10
LoneStar,Tex. L6 ..... 5.20
Mansfield,O. E6 ..... 5.10
Minnequa,Colo. C10 ..... 5.95
Munhall,Pa. U5 ..... 5.10
Newport,Ky. A2 ..... 5.10
Pittsburgh J5 ..... 5.10
Riverdale,Ill. A1 ..... 5.10
Seattle B3 ..... 6.00
Sharon,Pa. S3 ..... 5.10
S.Chicago,Ill. U5, W14 ..... 5.10
SparrowsPoint,Md. B2 ..... 5.10
Sterling,Ill. N15 ..... 5.10
Steubenville,O. W10 ..... 5.10
Warren,O. R2 ..... 5.10
Youngstown U5, Y1 ..... 5.10

**PLATES, Carbon Abras. Resist.**

Claymont,Del. C22 ..... 6.75
Fontana,Calif. K1 ..... 7.55
Geneva,Utah C11 ..... 6.75
Houston S5 ..... 6.85
Johnstown,Pa. B2 ..... 6.75
SparrowsPoint,Md. B2 ..... 6.75

**PLATES, Wrought Iron**

Economy,Pa. B14 ..... 13.15

**PLATES, H.S., L.A.**

Aliquippa,Pa. J5 ..... 7.625
Bessemer,Ala. T2 ..... 7.625
Clairton,Pa. U5 ..... 7.625
Claymont,Del. C22 ..... 7.625
Cleveland J5, R2 ..... 7.625
*Coatesville,Pa. L7* ..... *7.625*
Conshohocken,Pa. A3 ..... 7.625
Economy,Pa. B14 ..... 7.625
Ecorse,Mich. G5 ..... 7.725
Fairfield,Ala. T2 ..... 7.625
Farrell,Pa. S3 ..... 7.625
Fontana,Calif.(30) K1 ..... 8.425
Gary,Ind. U5 ..... 7.625
Geneva,Utah C11 ..... 7.625
Houston S5 ..... 7.725
Ind.Harbor,Ind. I-2, Y1 ..... 7.625
Johnstown,Pa. B2 ..... 7.625
Munhall,Pa. U5 ..... 7.625
Pittsburgh J5 ..... 7.625
Seattle B3 ..... 8.525
Sharon,Pa. S3 ..... 7.625
S.Chicago,Ill. U5, W14 ..... 7.625
SparrowsPoint,Md. B2 ..... 7.625
Warren,O. R2 ..... 7.625
Youngstown U5 ..... 7.625

**PLATES, ALLOY**

Aliquippa,Pa. J5 ..... 7.20
Claymont,Del. C22 ..... 7.20
Coatesville,Pa. L7 ..... 7.20
Economy,Pa. B14 ..... 7.20
Fontana,Calif. K1 ..... 8.00
Gary,Ind. U5 ..... 7.20
Houston S5 ..... 7.30
Ind.Harbor,Ind. Y1 ..... 7.20
Johnstown,Pa. B2 ..... 7.20
Lowellville,O. S3 ..... 7.20
Munhall,Pa. U5 ..... 7.20
Newport,Ky. A2 ..... 7.20
Pittsburgh J5 ..... 7.20
Seattle B3 ..... 8.10
Sharon,Pa. S3 ..... 7.20
S.Chicago,Ill. U5, W14 ..... 7.20
SparrowsPoint,Md. B2 ..... 7.20
Youngstown Y1 ..... 7.20

**FLOOR PLATES**

Cleveland J5 ..... 6.175
Conshohocken,Pa. A3 ..... 6.175
Ind.Harbor,Ind. I-2 ..... 6.175
Munhall,Pa. U5 ..... 6.175
S.Chicago,Ill. U5 ..... 6.175

**PLATES, Ingot Iron**

Ashland c.l.(15) A10 ..... 5.35
Ashland l.c.l.(15) A10 ..... 5.85
Cleveland c.l. R2 ..... 5.85
Warren,O. c.l. R2 ..... 5.85

## BARS

**BARS, Hot-Rolled Carbon (Merchant Quality)**

Ala.City,Ala.(9) R2 ..... 5.425
Aliquippa,Pa.(9) J5 ..... 5.425
Alton,Ill. L1 ..... 5.625
Atlanta(9) A11 ..... 5.625
Bessemer,Ala.(9) T2 ..... 5.425
Birmingham(9) C15 ..... 5.425
Buffalo(9) R2 ..... 5.425
Clairton,Pa.(9) U5 ..... 5.425
Cleveland(9) R2 ..... 5.425
Ecorse,Mich.(9) G5 ..... 5.525
Emeryville,Calif. J7 ..... 6.175
Fairfield,Ala.(9) T2 ..... 5.425
Fairless,Pa.(9) U5 ..... 5.575
Fontana,Calif.(9) K1 ..... 6.125
Gary,Ind.(9) U5 ..... 5.425
Houston(9) S5 ..... 5.675
Ind.Harbor(9) I-2, Y1 ..... 5.425
Johnstown,Pa.(9) B2 ..... 5.425
Joliet,Ill. P22 ..... 5.425
KansasCity,Mo.(9) S5 ..... 5.675
Lackawanna(9) B2 ..... 5.425
LosAngeles(9) B3 ..... 6.125
Midland,Pa.(23) C18 ..... 5.725
Milton,Pa. M18 ..... 5.575
Minnequa,Colo. C10 ..... 5.875
Niles,Calif. P1 ..... 6.125
N.Tonawanda,N.Y.(23)B11 ..... 5.775
Owensboro,Ky.(9) G8 ..... 5.425
Pittsburg,Calif.(9) C11 ..... 6.125
Pittsburgh(9) J5 ..... 5.425
Portland,Oreg. O4 ..... 6.175
Seattle B3, N14 ..... 6.175
S.Ch'c'go(9)R2,U5,W14 ..... 5.425
S.Duquesne,Pa.(9) U5 ..... 5.425
S.SanFran.,Calif.(9)B3 ..... 6.175
Sterling,Ill.(1)(9) N15 ..... 5.425
Sterling,Ill.(9) N15 ..... 5.525
Struthers,O.(9) Y1 ..... 5.425
Tonawanda,N.Y. B12 ..... 5.425
Torrance,Calif.(9) C11 ..... 6.125
Youngstown(9)R2, U5 ..... 5.425

**BARS, H.R. Leaded Alloy (Including leaded extra)**

Warren,O. C17 ..... 7.475

**BARS, Hot-Rolled Alloy**

Aliquippa,Pa. J5 ..... 6.475
Bethlehem,Pa. B2 ..... 6.475
Bridgeport,Conn. C32 ..... 6.55
Buffalo R2 ..... 6.475
Canton,O. R2, T7 ..... 6.475
Clairton,Pa. U5 ..... 6.475
Detroit S41 ..... 6.475
Economy,Pa. B14 ..... 6.475
Ecorse,Mich. G5 ..... 6.575
Fairless,Pa. U5 ..... 6.625
Farrell,Pa. S3 ..... 6.475
Fontana,Calif. K1 ..... 7.525
Gary,Ind. U5 ..... 6.475
Houston S5 ..... 6.725
Ind.Harbor,Ind. I-2, Y1 ..... 6.475
Johnstown,Pa. B2 ..... 6.475
KansasCity,Mo. S5 ..... 6.725
Lackawanna,N.Y. B2 ..... 6.475
Lowellville,O. S3 ..... 6.475
LosAngeles B3 ..... 7.525
Massillon,O. R2 ..... 6.475
Midland,Pa. C18 ..... 6.475
Owensboro,Ky. G8 ..... 6.475
Pittsburgh J5 ..... 6.475
Sharon,Pa. S3 ..... 6.475
S.Chicago R2, U5, W14 ..... 6.475
S.Duquesne,Pa. U5 ..... 6.475
Struthers,O. Y1 ..... 6.475
Warren,O. C17 ..... 6.475
Youngstown U5 ..... 6.475

**BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy**

Aliquippa,Pa. J5 ..... 7.925
Bessemer,Ala. T2 ..... 7.925
Bethlehem,Pa. B2 ..... 7.925
Clairton,Pa. U5 ..... 7.925
Cleveland R2 ..... 7.925
Ecorse,Mich. G5 ..... 8.025
Fairfield,Ala. T2 ..... 7.925
Fontana,Calif. K1 ..... 8.625
Gary,Ind. U5 ..... 7.925
Houston S5 ..... 8.175
Ind.Harbor,Ind. Y1 ..... 7.925
Johnstown,Pa. B2 ..... 7.925
KansasCity,Mo. S5 ..... 8.175
Lackawanna,N.Y. B2 ..... 7.925
LosAngeles B3 ..... 8.625
Pittsburgh J5 ..... 7.925
Seattle B3 ..... 8.675
S.Chicago,Ill. U5, W14 ..... 7.925
S.Duquesne,Pa. U5 ..... 7.925
S.SanFrancisco B3 ..... 8.675
Struthers,O. Y1 ..... 7.925
Youngstown U5 ..... 7.925

**BAR SIZE ANGLES; H.R. Carbon**

Bethlehem,Pa.(9) B2 ..... 5.575
Houston(9) S5 ..... 5.675
KansasCity,Mo.(9) S5 ..... 5.675
Lackawanna(9) B2 ..... 5.425
Sterling,Ill. N15 ..... 5.525
Sterling,Ill.(1) N15 ..... 5.425
Tonawanda,N.Y. B12 ..... 5.425

**BAR SIZE ANGLES; S. Shapes**

Aliquippa,Pa. J5 ..... 5.425
Atlanta A11 ..... 5.625
Joliet,Ill. P22 ..... 5.425
Niles,Calif. P1 ..... 6.125
Pittsburgh J5 ..... 5.425
Portland,Oreg. O4 ..... 6.175
SanFrancisco S7 ..... 6.275
Seattle B3 ..... 6.175

**BAR SHAPES, Hot-Rolled Alloy**

Aliquippa,Pa. J5 ..... 6.55
Clairton,Pa. U5 ..... 6.55
Gary,Ind. U5 ..... 6.55
Houston S5 ..... 6.80
KansasCity,Mo. S5 ..... 6.80
Pittsburgh J5 ..... 6.55
Youngstown U5 ..... 6.55

**BARS, C.F., Leaded Alloy (Including leaded extra)**

Ambridge,Pa. W18 ..... 9.925
BeaverFalls,Pa. M12 ..... 9.925
Camden,N.J. P13 ..... 10.10
Chicago W18 ..... 9.925
Cleveland C20 ..... 9.925•
Elyria,O. W8 ..... 9.925
LosAngeles P2, S30 ..... 11.40•
Monaca,Pa. S17 ..... 9.925
Newark,N.J. W18 ..... 10.10
SpringCity,Pa. K3 ..... 10.10
Warren,O. C17 ..... 9.925

•Grade A; add 0.50c for Grade B.

**BARS, Cold-Finished Carbon**

Ambridge,Pa. W18 ..... 7.30
BeaverFalls,Pa. M12,R2 ..... 7.30
Birmingham C15 ..... 7.90
Buffalo B5 ..... 7.35
Camden,N.J. P13 ..... 7.75
Carnegie,Pa. C12 ..... 7.30
Chicago W18 ..... 7.30
Cleveland A7, C20 ..... 7.30
Detroit B5, P17 ..... 7.50
Detroit S41 ..... 7.30
Donora,Pa. A7 ..... 7.30
Elyria,O. W8 ..... 7.30
FranklinPark,Ill. N5 ..... 7.30
Gary,Ind. R2 ..... 7.30
GreenBay,Wis. F7 ..... 7.30
Hammond,Ind. J5, L2 ..... 7.30
Hartford,Conn. R2 ..... 7.80
Harvey,Ill. B5 ..... 7.30
LosAngeles(49) S30 ..... 8.75
LosAngeles P2, R2 ..... 8.75
Mansfield,Mass. B5 ..... 7.85
Massillon,O. R2, R8 ..... 7.30
Midland,Pa. C18 ..... 7.30
Monaca,Pa. S17 ..... 7.30
Newark,N.J. W18 ..... 7.75
NewCastle,Pa.(17) B4 ..... 7.30
Pittsburgh J5 ..... 7.30
Plymouth,Mich. P5 ..... 7.55
Putnam,Conn. W18 ..... 7.85
Readville,Mass. C14 ..... 7.85
S.Chicago,Ill. W14 ..... 7.30
SpringCity,Pa. K3 ..... 7.75
Struthers,O. Y1 ..... 7.30
Warren,O. C17 ..... 7.30
Willimantic,Conn. J5 ..... 7.80
Waukegan,Ill. A7 ..... 7.30
Youngstown F3, Y1 ..... 7.30

**BARS, Cold-Finished Carbon (Turned and Ground)**

Cumberland,Md.(5) C19 ..... 6.55

**BARS, Cold-Finished Alloy**

Ambridge,Pa. W18 ..... 8.775
BeaverFalls,Pa. M12,R2 ..... 8.775
Bethlehem,Pa. B2 ..... 8.775
Bridgeport,Conn. C32 ..... 8.925
Buffalo B5 ..... 8.775
Camden,N.J. P13 ..... 8.95
Canton,O. T7 ..... 8.775
Carnegie,Pa. C12 ..... 8.775
Chicago W18 ..... 8.775
Cleveland A7, C20 ..... 8.775
Detroit B5, P17 ..... 8.975
Detroit S41 ..... 8.775
Donora,Pa. A7 ..... 8.775
Elyria,O. W8 ..... 8.775
FranklinPark,Ill. N5 ..... 8.775
Gary,Ind. R2 ..... 8.775
GreenBay,Wis. F7 ..... 8.775
Hammond,Ind. J5, L2 ..... 8.775
Hartford,Conn. R2 ..... 9.075
Harvey,Ill. B5 ..... 8.775
Lackawanna,N.Y. B2 ..... 8.775
LosAngeles P2, S30 ..... 10.75
Mansfield,Mass. B5 ..... 9.075
Massillon,O. R2, R8 ..... 8.775
Midland,Pa. C18 ..... 8.775
Monaca,Pa. S17 ..... 8.775
Newark,N.J. W18 ..... 8.95
Plymouth,Mich. P5 ..... 8.975
S.Chicago,Ill. W14 ..... 8.775
SpringCity,Pa. K3 ..... 8.95
Struthers,O. Y1 ..... 8.775
Warren,O. C17 ..... 8.775
Waukegan,Ill. A7 ..... 8.775
Willimantic,Conn. J5 ..... 9.075
Worcester,Mass. A7 ..... 9.075
Youngstown F3, Y1 ..... 8.775

**BARS, Reinforcing (To Fabricators)**

AlabamaCity,Ala. R2 ..5.425
Atlanta A11 .....5.425
Birmingham C15 .....5.425
Buffalo R2 .....5.425
Cleveland R2 .....5.425
Ecorse,Mich. G5 .....5.775
Emeryville,Calif. J7 ..6.175
Fairfield,Ala. T2 .....5.425
Fairless,Pa. U5 .....5.575
Fontana,Calif. K1 ....6.125
Ft. Worth,Tex.(4)(26)T4 5.875
Gary,Ind. U5 .....5.425
Houston S5 .....5.675
Ind.Harbor,Ind. I-2, Y1 5.425
Johnstown,Pa. B2 ....5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo. S5 ....5.675
Kokomo,Ind. C16 ....5.525
Lackawanna,N.Y. B2 ..5.425
LosAngeles B3 .....6.125
Milton,Pa M18 .....5.575
Minnequa,Colo. C10 ..5.875
Niles,Calif. P1 .....6.125
Pittsburg,Calif. C11 ..6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.175
S.Chicago,Ill. R2 .....5.425
S.Duquesne,Pa. U5 ....5.425
S.SanFrancisco B3 ....6.175
SparrowsPoint,Md. B2. 5.425
Sterling,Ill.(1) N15 ..5.425
Sterling,Ill. N15 .....5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 . 6.00
Torrance,Calif. C11 . .6.125
Youngstown R2, U5 ..5.425

**BARS, Reinforcing (Fabricated; to Consumers)**

Boston B2, U8 .....7.65
Chicago U8 .....6.91
Cleveland U8 .....6.89
Houston S5 .....7.35
Johnstown,Pa. B2 .....7.08
KansasCity,Mo. S5 ....7.35
Lackawanna,N.Y. B2 ..6.85
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.55
Philadelphia U8 .....7.38
Pittsburgh J5, U8 .....7.10
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.70
SparrowsPt.,Md. B2 ...7.08
St.Paul U8 .....7.92
Williamsport,Pa. S19 ..7.00

**BARS, Wrought Iron**

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy,(Staybolt)B14 18.45

**RAIL STEEL BARS**

ChicagoHts.(3) C2, I-2 5.325
ChicagoHts.(4)(44) I-2 5.425
ChicagoHts.(4) C2 ...5.425
Franklin,Pa. (3) F5 ..5.325
Franklin,Pa. (4) F5 ..5.425
JerseyShore Pa.(3) J8 ..5.30
Marion,O. (3) P11 ...5.325
Tonawanda(3) B12 ...5.325
Tonawanda(4) B12 ....6.00
Williamsport,Pa.(3) S19.5.50

## SHEETS

**SHEETS, Hot-Rolled Steel (18 Gage and Heavier)**

AlabamaCity,Ala. R2 ..4.925
Allenport,Pa. P7 .....4.925
Ashland,Ky.(8) A10 ..4.925
Cleveland J5, R2 .....4.925
Conshohocken,Pa. A3 . 4.975
Detroit(8) M1 .....5.025
Ecorse,Mich. G5 .....5.025
Fairfield,Ala. T2 .....4.925
Fairless,Pa. U5 .....4.975
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.925
Geneva,Utah C11 ....5.025
GraniteCity,Ill.(8) G4..5.125
Ind.Harbor,Ind. I-2, Y1 4.925
Irvin,Pa. U5 .....4.925
Lackawanna,N.Y. B2 ..4.925
Mansfield,O. E6 .....4.925
Munhall,Pa. U5 .....4.925
Newport,Ky.(8) A2 ...4.925
Niles,O. M21, S3 .....4.925
Pittsburg,Calif. C11 ..5.625
Pittsburgh J5 .....4.925
Portsmouth,O. P12 ....4.925
Riverdale,Ill. A1 .....4.925
Sharon,Pa. S3 .....4.925
S.Chicago,Ill. W14 ....4.925
SparrowsPoint,Md. B2.4.925
Steubenville,O. W10 ..4.925
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ....4.925
Youngstown U5, Y1 ..4.925

**SHEETS, H.R.(19) Ga. & Lighter**

Niles,O. M21 .....6.05

**SHEETS, H.R. Alloy**

Gary,Ind. U5 .....8.10
Ind.Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.10
Munhall,Pa. U5 .....8.10
Newport,Ky. A2 .....8.10
Youngstown U5, Y1 ...8.10

**SHEETS, H.R.(14 Ga. & Heavier) High-Strength, Low-Alloy**

Cleveland J5, R2 .....7.275
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.375
Fairfield,Ala. T2 .....7.275
Fairless,Pa. U5 .....7.325
Farrell,Pa. S3 .....7.275
Fontana,Calif. K1 ....8.025
Gary,Ind. U5 .....7.275
Ind.Harbor,Ind. I-2, Y1 7.275
Irvin,Pa. U5 .....7.275
Lackawanna (35) B2 ..7.275
Munhall,Pa. U5 .....7.275
Pittsburgh J5 .....7.275
S.Chicago,Ill. U5, W14 7.275
Sharon,Pa. S3 .....7.275
SparrowsPoint(36) B2 .7.275
Warren,O. R2 .....7.275
Weirton,W.Va. W6 ....7.275
Youngstown U5, Y1 ...7.275

**SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)**

Ashland,Ky.(8) A10 ..5.175
Cleveland R2 .....5.675
Warren,O. R2 .....5.675

**SHEETS, Cold-Rolled Ingot Iron**

Cleveland R2 .....6.80
Middletown,O. A10 ....6.55
Warren,O. R2 .....6.80

**SHEETS, Cold-Rolled Steel (Commercial Quality)**

AlabamaCity,Ala. R2 ..6.05
Allenport,Pa. P7 .....6.05
Cleveland J5, R2 .....6.05
Conshohocken,Pa. A3 ..6.10
Detroit M1 .....6.05
Ecorse,Mich. G5 .....6.15
Fairfield,Ala. T2 .....6.05
Fairless,Pa. U5 .....6.10
Follansbee,W.Va. F4 ..6.05
Fontana,Calif. K1 ....7.30
Gary,Ind. U5 .....6.05
GraniteCity,Ill. G4 ....6.25
Ind.Harbor,Ind. I-2, Y1 6.05
Irvin,Pa. U5 .....6.05
Lackawanna,N.Y. B2 ..6.05
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....6.05
Newport,Ky. A2 .....6.05
Pittsburg,Calif. C11 ....7.00
Pittsburgh J5 .....6.05
Portsmouth,O. P12 ....6.05
SparrowsPoint,Md. B2 ..6.05
Steubenville,O. W10 ..6.05
Warren,O. R2 .....6.05
Weirton,W.Va. W6 ....6.05
Yorkville,O. W10 .....6.05
Youngstown Y1 .....6.05

**SHEETS, Cold-Rolled, High-Strength, Low Alloy**

Cleveland J5, R2 ....8.975
Ecorse,Mich. G5 .....9.075
Fairless,Pa. U5 .....9.025
Fontana,Calif. K1 ...10.275
Gary,Ind. U5 .....8.975
IndianaHarbor,Ind. Y1 8.975
Irvin,Pa. U5 .....8.975
Lackawanna(37) B2 ..8.975
Pittsburgh J5 .....8.975
SparrowsPoint (38) B2 8.975
Warren,O. R2 .....8.975
Weirton,W.Va. W6 ....8.975
Youngstown Y1 .....8.975

**SHEETS, Culvert**

| | Cu Steel | Cu Fe |
|---|---|---|
| Ashland,Ky. A10 | .6.95 | 7.20 |
| Canton,O. R2 | ....6.95 | 7.45 |
| Fairfield T2 | .....6.95 | 7.20 |
| Gary,Ind. U5 | ....6.95 | 7.20 |
| GraniteCity,Ill. G4 | 7.15 | ... |
| Ind.Harbor I-2 | ..6.95 | 7.20 |
| Irvin,Pa. U5 | ....6.95 | 7.20 |
| Kokomo,Ind. C16 | .7.05 | ... |
| MartinsFry. W10 | .6.95 | 7.20 |
| Pitts.,Calif. C11 | ..7.70 | ... |
| Pittsburgh J5 | ....6.95 | ... |
| SparrowsPt. B2 | ..6.95 | ... |

**SHEETS, Culvert—Pure Iron**

Ind.Harbor,Ind. I-2 ....7.20

**SHEETS, Galvanized Steel Hot-Dipped**

AlabamaCity,Ala. R2 ..6.60‡
Ashland,Ky. A10 .....6.60†
Canton,O. R2 .....6.60‡
Dover,O. E6 .....6.60†
Fairfield,Ala. T2 .....6.60†
Gary,Ind. U5 .....6.60†
GraniteCity,Ill. G4 ....6.80*
Ind.Harbor,Ind. I-2 ....6.60†
Irvin,Pa. U5 .....6.60†
Kokomo,Ind. C16 .....6.70‡
MartinsFerry,O. W10 ..6.60*
Middletown,O. A10 ....6.60†
Pittsburg,Calif. C11....7.35*
Pittsburgh J5 .....6.60†
SparrowsPt.,Md. B2 ..6.60†
Warren,O. R2 .....6.60†
Weirton,W.Va. W6 ....6.60*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

**SHEETS, Well Casing**

Fontana,Calif. K1 ....7.175

**SHEETS, Galvanized High-Strength, Low-Alloy**

Irvin,Pa. U5 .....9.725
SparrowsPt.(39) B2 ..9.725

**SHEETS, Galvannealed Steel**

Canton,O. R2 .....7.00
Irvin,Pa. U5 .....7.00

**SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)**

Ashland,Ky. A10 .....6.85
Middletown,O. A10 ....6.85

**SHEETS, Electrogalvanized**

Cleveland (28) R2 ....7.425
Niles,O. (28) R2 .....7.425
Youngstown J5 .....7.275
Weirton,W.Va. W6 ...7.275

**SHEETS, Aluminum Coated**

Butler,Pa. A10 (type 1) .9.25
Butler,Pa. A10 (type 2) .9.35

**SHEETS, Enameling Iron**

Ashland,Ky. A10 ....6.625
Cleveland R2 .....6.625
Fairfield,Ala. T2 .....6.625
Gary,Ind. U5 .....6.625
GraniteCity,Ill. G4 ....6.825
Ind.Harbor,Ind. I-2, Y1 6.625
Irvin,Pa. U5 .....6.625
Middletown,O. A10 ....6.625
Niles,O. M21, S3 ....6.625
Youngstown Y1 .....6.625

**BLUED STOCK, 29 Gage**

Follansbee,W.Va. F4 ..8.65
Ind.Harbor,Ind. I-2 ..8.475
Yorkville,O. W10 .....8.475

**SHEETS, Long Terne, Steel (Commercial Quality)**

BeechBottom,W.Va.W10 7.00
Gary,Ind. U5 .....7.09
Mansfield,O. E6 .....7.00
Middletown,O. A10 ....7.00
Niles,O. M21, R2, S3 ..7.00
Weirton,W.Va. W6 ....7.00

**SHEETS, Long Terne, Ingot Iron**

Middletown,O. A10 ....7.40

## Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div. Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless Steel Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

## STRIP

**STRIP, Hot-Rolled Carbon**

Ala.City,Ala.(27) R2 ..4.925
Allenport,Pa. P7 .....4.925
Alton,Ill. L1 .....5.125
Ashland,Ky.(8) A10 ...4.925
Atlanta A11 .....4.925
Bessemer,Ala. T2 .....4.925
Birmingham C15 .....4.925
Buffalo(27) R2 .....4.925
Conshohocken,Pa. A3 ..4.975
Detroit M1 .....5.025
Ecorse,Mich. G5 .....5.025
Fairfield,Ala. T2 .....4.925
Fontana,Calif. K1 .....5.675
Gary,Ind. U5 .....4.925
Ind.Harbor,Ind. I-2, Y1..4.925
Johnstown,Pa.(25) B2..4.925
Lackaw'na,N.Y.(25) B2 4.925
LosAngeles(25) B3 ....5.675
Minnequa,Colo. C10 ...6.025
Riverdale,Ill. A1 .....4.925
SanFrancisco S7 .....6.35
Seattle(25) B3 .....5.925
Seattle N14 .....6.35
Sharon,Pa. S3 .....4.925
S.Chicago W14 .....4.925
S.SanFrancisco(25) B3..5.675
SparrowsPoint,Md. B2..4.925
Sterling,Ill.(1) N15 ....4.925
Sterling,Ill. N15 .....5.025
Torrance,Calif. C11 ....5.675
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ....4.925
Youngstown U5 .....4.925

**STRIP, Hot-Rolled Alloy**

Carnegie,Pa. S18 .....8.10
Farrell,Pa. S3 .....8.10
Gary,Ind. U5 .....8.10
Houston S5 .....8.35
Ind.Harbor,Ind. Y1 ....8.10
KansasCity,Mo. S5 ....8.35
LosAngeles B3 .....9.30
Lowellville,O. S3 .....8.10
Newport,Ky. A2 .....8.10
Sharon,Pa. A2, S3 .....8.10
S.Chicago,Ill. W14 .....8.10
Youngstown U5, Y1 ....8.10

**STRIP, Hot-Rolled High-Strength, Low-Alloy**

Bessemer,Ala. T2 .....7.325
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.425
Fairfield,Ala. T2 .....7.325
Farrell,Pa. S3 .....7.325
Gary,Ind. U5 .....7.325
Ind.Harbor,Ind. I-2, Y1 7.325
Lackawanna,N.Y. B2 ..7.325
LosAngeles(25) B3 ....8.075
Seattle(25) B3 .....8.325
Sharon,Pa. S3 .....7.325
S.Chicago,Ill. W14 .....7.325
S.SanFrancisco(25) B3 .8.075
SparrowsPoint,Md. B2..7.325
Warren,O. R2 .....7.325
Weirton,W.Va. W6 ....7.325
Youngstown U5, Y1 ....7.325

**STRIP, Hot-Rolled Ingot Iron**

Ashland,Ky.(8) A10 ...5.175
Warren,O. R2 .....5.675

**STRIP, Cold-Rolled Carbon**

Anderson,Ind. G6 .....7.15
Baltimore T6 .....7.15
Boston T6 .....7.70
Buffalo S40 .....7.15
Cleveland A7, J5 .....7.15
Conshohocken,Pa. A3 ..7.20
Dearborn,Mich. D3 ....7.25
Detroit D2, M1, P20 ...7.25
Dover,O. G6 .....7.15
Ecorse,Mich. G5 .....7.25
Evanston,Ill. M22 .....7.25
Follansbee,W.Va. F4 ...7.15
Fontana,Calif. K1 .....9.00
FranklinPark,Ill. T6 ...7.25
Ind.Harbor,Ind. Y1 ....7.15
Indianapolis J5 .....7.30
LosAngeles J5 .....9.05
LosAngeles C1 .....9.20
NewBedford,Mass. R10..7.60
NewBritain,Conn. S15 ..7.60
NewCastle,Pa. B4, E5 ..7.15
NewHaven,Conn. D2 ...7.60
NewKensington,Pa. A6..7.15
Pawtucket,R.I. R3 .....7.80
Pawtucket,R.I. N8 .....7.70
Philadelphia P24 .....7.70
Pittsburgh J5 .....7.15
Riverdale,Ill. A1 .....7.25
Rome,N.Y.(32) R6 .....7.15
Sharon,Pa. S3 .....7.15
Trenton,N.J.(31) R5 ....8.60
Wallingford,Conn. W2 ..7.60
Warren,O. R2, T5 .....7.15
Weirton,W.Va. W6 .....7.15
Worcester,Mass. A7 .....7.70
Youngstown J5, Y1 ....7.15

**STRIP, Cold-Rolled Alloy**

Boston T6 .....15.40
Carnegie,Pa. S18 .....15.05
Cleveland A7 .....15.05
Dover,O. G6 .....15.05
Farrell,Pa. S3 .....15.05
FranklinPark,Ill. T6 ...15.05
Harrison,N.J. C18 .....15.05
Indianapolis J5 .....15.20
Lowellville,O. S3 .....15.05
Pawtucket,R.I. N8 .....15.40
Riverdale,Ill. A1 .....15.05
Sharon,Pa. S3 .....15.05
Worcester,Mass. A7 ...15.35
Youngstown J5 .....15.05

**STRIP, Cold-Rolled High-Strength, Low-Alloy**

Cleveland A7 .....10.45
Dearborn,Mich. D3 ....10.60
Dover,O. G6 .....10.45
Ecorse,Mich. G5 .....10.60
Farrell,Pa. S3 .....10.50
Ind.Harbor,Ind. Y1 ...10.65
Sharon,Pa. S3 .....10.50
Warren,O. R2 .....10.45

| STRIP, Cold-Finished Spring Steel (Annealed) | 0.26-0.40C | 0.41-0.60C | 0.61-0.80C | 0.81-1.05C | 1.06-1.35C |
|---|---|---|---|---|---|
| Baltimore T6 | 9.50 | 10.70 | 12.90 | 15.90 | 18.85 |
| Boston T6 | 9.50 | 10.70 | 12.90 | 15.90 | 18.85 |
| Bristol,Conn. W1 | ... | 10.70 | 12.90 | 16.10 | 19.30 |
| Carnegie,Pa. S18 | 8.95 | 10.40 | 12.60 | 15.60 | .... |
| Cleveland A7 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| Dearborn,Mich. D3 | 9.05 | 10.50 | 12.70 | .... | .... |
| Detroit D2 | 9.05 | 10.50 | 12.70 | 15.70 | .... |
| Dover,O. G6 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| Evanston,Ill. M22 | 8.95 | 10.40 | 12.60 | 15.60 | .... |
| Fostoria,O. S1 | 10.05 | 10.40 | 12.60 | 15.60 | .... |
| FranklinPark,Ill. T6 | 9.05 | 10.40 | 12.60 | 15.60 | 18.55 |
| Harrison,N.J. C18 | .... | .... | 12.90 | 16.10 | 19.30 |
| Indianapolis J5 | 9.10 | 10.55 | 12.60 | 15.60 | 18.55 |
| LosAngeles C1 | 11.15 | 12.60 | 14.80 | 17.80 | .... |
| LosAngeles J5 | 11.15 | 12.60 | 14.80 | .... | .... |
| NewBritain,Conn.(10) S15 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| NewCastle,Pa. B4, E5 | 8.95 | 10.40 | 12.60 | 15.60 | .... |
| NewHaven,Conn. D2 | 9.40 | 10.70 | 12.90 | 15.90 | .... |
| NewKensington,Pa. A6 | 8.95 | 10.40 | 12.60 | 15.60 | .... |
| New York W3 | ... | 10.70 | 12.90 | 16.10 | 19.30 |
| Pawtucket,R.I. N8 | 9.50 | 10.70 | 12.90 | 15.90 | 18.85 |
| Riverdale,Ill. A1 | 9.05 | 10.40 | 12.60 | 15.60 | 18.55 |
| Rome,N.Y.(32) R6 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| Sharon,Pa. S3 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| Trenton,N.J. R5 | ... | 10.70 | 12.90 | 16.10 | 19.30 |
| Wallingford,Conn. W2 | 9.40 | 10.70 | 12.90 | 15.90 | 18.75 |
| Warren,O. T5 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| Worcester,Mass. A7, T6 | 9.50 | 10.70 | 12.90 | 15.90 | 18.85 |
| Youngstown J5 | 8.95 | 10.40 | 12.60 | 15.60 | 18.55 |
| **Spring Steel (Tempered)** | | | **Up to 0.80C** | **0.81-1.05C** | **1.06-1.35C** |
| Bristol,Conn. W1 | ... | ... | 18.10 | 21.95 | 26.30 |
| Buffalo W12 | ... | ... | 18.10 | .... | .... |
| Fostoria,O. S1 | ... | ... | 18.30 | 22.15 | .... |
| FranklinPark,Ill. T6 | ... | ... | 18.45 | 22.30 | 26.65 |
| Harrison,N.J. C18 | ... | ... | 18.10 | 21.95 | 26.30 |
| New York W3 | ... | ... | 18.10 | 21.95 | 26.30 |
| Palmer,Mass. W12 | ... | ... | 18.10 | .... | .... |
| Trenton,N.J. R5 | ... | ... | 18.10 | 21.95 | 26.30 |
| Worcester,Mass. A7, T6 | ... | ... | 18.10 | 21.95 | 26.30 |
| Youngstown J5 | ... | ... | 18.45 | 22.30 | 26.65 |

**STRIP, Cold-Rolled Ingot Iron**

Warren,O. R2 .....7.90

**STRIP, C.R. Electrogalvanized**

Cleveland A7 .....7.15*
Dover,O. G6 .....7.15*
Evanston,Ill. M22 .....7.25*
Riverdale,Ill. A1 .....7.25*
Warren,O. B9, T5 ....7.15*
Worcester,Mass. A7 ...7.70*
Youngstown J5 .....7.15*

*Plus galvanizing extras.

**STRIP, Galvanized (Continuous)**

Sharon,Pa. S3 .....7.275

**TIGHT COOPERAGE HOOP**

Atlanta A11 .....5.65
Riverdale,Ill. A1 .....5.50
Sharon,Pa. S3 .....5.35
Youngstown U5 .....5.35

## SILICON STEEL

| H.R. SHEETS(22 Ga., cut lengths) | Field | Armature | Electric | Motor | Dynamo |
|---|---|---|---|---|---|
| BeechBottom,W.Va. W10 | .... | .... | 11.80 | 12.90 | 13.95 |
| Mansfield,O. E6 | 9.625 | 11.10 | 11.80 | 12.90 | 13.95 |
| Newport,Ky. A2 | 9.625 | 11.10 | 11.80 | 12.90 | 13.95 |
| Niles,O. M21, S3 | 9.625 | 11.10 | 11.80 | 12.90 | .... |
| Vandergrift,Pa. U5 | .... | 11.10 | 11.80 | 12.90 | 13.95 |
| Warren,O. R2 | 9.625 | 11.10 | 11.80 | 12.90 | .... |
| Zanesville,O. A10 | .... | 11.10 | 11.80 | 12.90 | 13.95 |

| C.R. COILS & CUT LENGTHS (22 Ga.) Fully Processed (Semiprocessed ½c lower) | Field | Armature | Electric | Motor | Dynamo |
|---|---|---|---|---|---|
| BeechBottom,W.Va. W10 | .... | 11.35 | 12.05 | 13.15 | 14.20 |
| Brackenridge,Pa. A4 | .... | .... | 12.05 | 13.15 | 14.20 |
| GraniteCity,Ill. G4 | 9.825* | 11.05* | 11.75* | 12.85* | .... |
| IndianaHarbor,Ind. I-2 | 9.625* | 10.85* | 11.55* | 12.65* | .... |
| Mansfield,O. E6 | 9.625* | 11.35 | 12.05 | 13.15 | 14.20 |
| Vandergrift,Pa. U5 | 9.625* | 11.35 | 12.05 | 13.15 | 14.20 |
| Warren,O. R2 | 9.625* | 11.35 | 12.05 | 13.15 | 14.20 |
| Zanesville,O. A10 | .... | 11.35† | 12.05 | 13.15 | 14.20 |
| | | | | | Stator |
| Vandergrift,Pa. U5 | .... | .... | .... | .... | 7.85 |

| H.R. SHEETS (22 Ga., cut lengths) | T-72 | T-65 | T-58 | T-52 |
|---|---|---|---|---|
| BeechBottom,W.Va. W10 | 15.00 | 15.55 | 16.05 | 17.10 |
| Vandergrift,Pa. U5 | 15.00 | 15.55 | 16.05 | 17.10 |
| Zanesville,O. A10 | 15.00 | 15.55 | 16.05 | 17.10 |

| C.R. COILS & CUT LENGTHS (22 Ga.) | Grain Oriented T-100 | T-90 | T-80 | T-73 | T-66 | T-72 |
|---|---|---|---|---|---|---|
| Brackenridge,Pa. A4 | .... | 17.60 | 19.20 | 19.70 | 20.20 | 15.25†† |
| Butler,Pa. A10 | .... | .... | 19.20 | 19.70 | 20.20 | .... |
| Vandergrift,Pa. U5 | 16.60 | 17.60 | 19.20 | 19.70 | 20.20 | 15.25** |
| Warren,O. R2 | .... | .... | .... | .... | .... | 15.25‡ |

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut lengths, ¾-cent lower. ††Coils only.

## TIN MILL PRODUCTS

| TIN PLATE, Electrolytic (Base Box) | 0.25 lb | 0.50 lb | 0.75 lb |
|---|---|---|---|
| Aliquippa,Pa. J5 | $8.75 | $9.00 | $9.40 |
| Fairfield,Ala. T2 | 8.85 | 9.10 | 9.50 |
| Fairless,Pa. U5 | 8.85 | 9.10 | 9.50 |
| Fontana,Calif. K1 | 9.50 | 9.75 | 10.15 |
| Gary,Ind. U5 | 8.75 | 9.00 | 9.40 |
| GraniteCity,Ill. G4 | 8.85 | 9.10 | 9.50 |
| IndianaHarbor,Ind. I-2, Y1 | 8.75 | 9.00 | 9.40 |
| Irvin,Pa. U5 | 8.75 | 9.00 | 9.40 |
| Niles,O. R2 | 8.75 | 9.00 | 9.40 |
| Pittsburg,Calif. C11 | 9.50 | 9.75 | 10.15 |
| SparrowsPoint,Md. B2 | 8.85 | 9.10 | 9.50 |
| Weirton,W.Va. W6 | 8.75 | 9.00 | 9.40 |
| Yorkville,O. W10 | 8.75 | 9.00 | 9.40 |
| **ELECTROTIN (22-27 Gage; Dollars per 100 lb)** | | | |
| Aliquippa,Pa. J5 | 7.725 | 7.925 | .... |
| Niles,O. R2 | 7.725 | 7.925 | 8.125 |

| TIN PLATE, American | 1.25 lb | 1.50 lb |
|---|---|---|
| Aliquippa,Pa.J5 | $10.05 | $10.30 |
| Fairfield,Ala. T2 | 10.15 | 10.40 |
| Fairless,Pa. U5 | 10.15 | 10.40 |
| Fontana,Calif.K1 | 10.80 | 11.05 |
| Gary,Ind. U5 | 10.05 | 10.30 |
| Ind.Harb. Y1 | 10.05 | 10.30 |
| Pitts.,Calif. C11 | 10.80 | 11.05 |
| Sp.Pt.,Md. B2 | 10.15 | 10.40 |
| Weirton,W.Va.W6 | 10.05 | 10.30 |
| Yorkville,O. W10 | 10.05 | 10.30 |

**BLACK PLATE (Base Box)**

Aliquippa,Pa. J5 .....$7.85
Fairfield,Ala. T2 .....7.95
Fairless,Pa. U5 .....7.95
Fontana,Calif. K1 .....8.60
Gary,Ind. U5 .....7.85
GraniteCity,Ill. G4 .....7.95
Ind.Harbor,Ind. I-2, Y1..7.85
Irvin,Pa. U5 .....7.85
Niles,O. R2 .....7.85
Pittsburg,Calif. C11 ...8.60
SparrowsPoint,Md. B2 ..7.95
Weirton,W.Va. W6 ....7.85
Yorkville,O. W10 .....7.85

**HOLLOWARE ENAMELING Black Plate (29 Gage)**

Aliquippa,Pa. J5 .....$7.50
Gary,Ind. U5 .....7.50
GraniteCity,Ill. G4 .....7.60
Ind.Harbor,Ind. Y1 .....7.50
Irvin,Pa. U5 .....7.50
Yorkville,O. W10 .....7.50

**MANUFACTURING TERNES (Special Coated, Base Box)**

Gary,Ind. U5 .....$9.70
Irvin,Pa. U5 .....9.70

**ROOFING SHORT TERNES (8 lb Coated, Base Box)**

Gary,Ind. U5 .....$11.25

## WIRE

**WIRE, Manufacturers Bright, Low Carbon**

AlabamaCity,Ala. R2 ..7.65
Aliquippa,Pa. J5 .....7.65
Alton,Ill. L1 .....7.85
Atlanta A11 .....7.65
Bartonville,Ill. K4 .....7.75
Buffalo W12 .....7.65
Chicago W13 .....7.65
Cleveland A7, C20 .....7.65
Crawfordsville,Ind. M8..7.75
Donora,Pa. A7 .....7.65
Duluth A7 .....7.65
Fairfield,Ala. T2 .....7.65
Fostoria,O.(24) S1 .....7.75
Houston S5 .....7.90
Jacksonville,Fla. M8 ..8.00
Johnstown,Pa. B2 .....7.65
Joliet,Ill. A7 .....7.65
KansasCity,Mo. S5 ....7.90
Kokomo,Ind. C16 .....7.75
LosAngeles B3 .....8.60
Minnequa,Colo. C10 ...7.90
Monessen,Pa. P7, P16 ..7.65
N.Tonawanda,N.Y. B11.7.65
Palmer,Mass. W12 .....7.95
Pittsburg,Calif. C11 ...8.60
Portsmouth,O. P12 .....7.65
Rankin,Pa. A7 .....7.65
S.Chicago,Ill. R2 .....7.65
S.SanFrancisco C10 ...8.60
SparrowsPoint,Md. B2 ..7.75
Sterling,Ill.(1) N15 ....7.65
Sterling,Ill. N15 .....7.75
Struthers,O. Y1 .....7.65
Waukegan,Ill. A7 .....7.65
Worcester,Mass. A7 ....7.95

**WIRE, Gal'd ACSR for Cores**

Bartonville,Ill. K4 .....12.65
Buffalo W12 .....12.65
Cleveland A7 .....12.65
Donora,Pa. A7 .....12.65
Duluth A7 .....12.65
Johnstown,Pa. B2 ....12.65
Minnequa,Colo. C10 ..12.775
Monessen,Pa. P7, P16..12.65
Muncie,Ind. I-7 .....12.85
NewHaven,Conn. A7 ...12.95
Palmer,Mass. W12 ....12.95
Pittsburg,Calif. C11 ...13.45
Portsmouth,O. P12 ....12.65
Roebling,N.J. R5 .....12.95
SparrowsPt.,Md. B2 ..12.75
Struthers,O. Y1 .....12.65
Trenton,N.J. A7 .....12.95
Waukegan,Ill. A7 .....12.65
Worcester,Mass. A7 ...12.95

**WIRE, Upholstery Spring**

Aliquippa,Pa. J5 .....9.30
Alton,Ill. L1 .....9.50
Buffalo W12 .....9.30
Cleveland A7 .....9.30
Donora,Pa. A7 .....9.30
Duluth A7 .....9.30
Johnstown,Pa. B2 .....9.30
KansasCity,Mo. S5 ....9.55
LosAngeles B3 .....10.25
Minnequa,Colo. C10 ....9.50
Monessen,Pa. P7, P16 ..9.30
NewHaven,Conn. A7 ....9.60
Palmer,Mass. W12 .....9.60
Pittsburg,Calif. C11 ...10.25
Portsmouth,O. P12 .....9.30
Roebling,N.J. R5 .....9.60
S.Chicago,Ill. R2 .....9.30
S.SanFrancisco C10 ...10.25
SparrowsPt.,Md. B2 ...9.40
Struthers,O. Y1 .....9.30
Trenton,N.J. A7 .....9.60
Waukegan,Ill. A7 .....9.30
Worcester A7, J4, T6...9.60

**WIRE, Fine & Weaving(8" Coils)**

Alton,Ill. L1 .....15.80
Bartonville,Ill. K4 ....15.70
Buffalo W12 .....15.60
Chicago W13 .....15.60
Cleveland A7 .....15.60
Crawfordsville,Ind. M8.15.70
Fostoria,O. S1 .....15.60
Houston S5 .....15.85
Jacksonville,Fla. M8 ..15.95
Johnstown,Pa. B2 .....15.60
KansasCity,Mo. S5 ....15.85
Kokomo,Ind. C16 .....15.60
Minnequa,Colo. C10 ...15.85
Monessen,Pa. P16 .....15.60
Muncie,Ind. I-7 .....15.80
Palmer,Mass. W12 .....15.90
S.SanFrancisco C10 ...16.45
Waukegan,Ill. A7 .....15.60
Worcester,Mass. A7, T6 15.90

**ROPE WIRE (A)**

Bartonville,Ill. K4 ....12.75
Buffalo W12 .....12.75
Fostoria,O. S1 .....12.75
Johnstown,Pa. B2 .....12.75
Monessen,Pa. P7 .....12.75
Muncie,Ind. I-7 .....12.95
Palmer,Mass. W12 ....13.05
Portsmouth,O. P12 ....12.75
Roebling,N.J. R5 .....13.05
SparrowsPt.,Md. B2 ..12.85
Struthers,O. Y1 .....12.75
Worcester,Mass. J4 ....13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

**WIRE, Tire Bead**

| | |
|---|---|
| Bartonville,Ill. K4 | 16.55 |
| Monessen,Pa. P16 | 16.55 |
| Roebling,N.J. R5 | 17.05 |

**WIRE, Cold-Rolled Flat**

| | |
|---|---|
| Anderson,Ind. G6 | 11.65 |
| Baltimore T6 | 11.95 |
| Boston T6 | 11.95 |
| Buffalo W12 | 11.65 |
| Chicago,W13 | 11.75 |
| Cleveland A7 | 11.65 |
| Crawfordsville,Ind. M8 | 11.65 |
| Dover,O. G6 | 11.65 |
| Fostoria,O. S1 | 11.65 |
| FranklinPark,Ill. T6 | 11.75 |
| Kokomo,Ind. C16 | 11.65 |
| Massillon,O. R8 | 11.65 |
| Milwaukee C23 | 11.85 |
| Monessen,Pa. P7, P16 | 11.65 |
| Palmer,Mass. W12 | 11.95 |
| Pawtucket,R.I. N8 | 11.95 |
| Philadelphia P24 | 11.95 |
| Riverdale,Ill. A1 | 11.75 |
| Rome,N.Y. R6 | 11.65 |
| Sharon, Pa. S3 | 11.65 |
| Trenton,N.J. R5 | 11.95 |
| Warren,O. B9 | 11.65 |
| Worcester,Mass. A7, T6 | 11.95 |

**NAILS, Stock** — Col.

| | |
|---|---|
| AlabamaCity,Ala. R2 | 173 |
| Aliquippa,Pa. J5 | 173 |
| Atlanta A11 | 175 |
| Bartonville,Ill. K4 | 175 |
| Chicago W13 | 173 |
| Cleveland A9 | 173 |
| Crawfordsville,Ind. M8 | 175 |
| Donora,Pa. A7 | 173 |
| Duluth A7 | 173 |
| Fairfield,Ala. T2 | 173 |
| Houston S5 | 178 |
| Jacksonville,Fla.(2o) M8 | 184 |
| Johnstown, Pa. B2 | 173 |
| Joliet,Ill. A7 | 173 |
| KansasCity,Mo. S5 | 178 |
| Kokomo,Ind. C16 | 175 |
| Minnequa,Colo. C10 | 178 |
| Monessen,Pa. P7 | 173 |
| Pittsburg,Calif. C11 | 192 |
| Rankin,Pa. A7 | 173 |
| S.Chicago,Ill. R2 | 173 |
| SparrowsPt.,Md. B2 | 175 |
| Sterling,Ill.(7) N15 | 175 |
| Worcester,Mass. A7 | 179 |

**(To Wholesalers; per cwt)**

| | |
|---|---|
| Galveston,Tex. D7 | $9.10 |

**NAILS, Cut (100 lb keg)**
**To Dealers (33)**

| | |
|---|---|
| Coshohocken,Pa. A3 | $9.80 |
| Wheeling,W.Va. W10 | 9.80 |

**POLISHED STAPLES** — Col.

| | |
|---|---|
| AlabamaCity,Ala. R2 | 175 |
| Aliquippa,Pa. J5 | 175 |
| Atlanta A11 | 177 |
| Bartonville,Ill. K4 | 177 |
| Crawfordsville,Ind. M8 | 177 |
| Donora,Pa. A7 | 175 |
| Duluth A7 | 175 |
| Fairfield,Ala. T2 | 175 |
| Houston S5 | 180 |
| Jacksonville,Fla.(2o) M8 | 186 |
| Johnstown,Pa. B2 | 175 |
| Joliet,Ill. A7 | 175 |
| KansasCity,Mo. S5 | 180 |
| Kokomo,Ind. C16 | 177 |
| Minnequa,Colo. C10 | 180 |
| Pittsburgh,Calif. C11 | 194 |
| Rankin,Pa. A7 | 175 |
| S.Chicago,Ill. R2 | 175 |
| SparrowsPt.,Md. B2 | 177 |
| Sterling,Ill.(7) N15 | 175 |
| Worcester,Mass. A7 | 181 |

**TIE WIRE, Automatic Baler (14½ Ga.)(Per 97 lb Net Box)**
**Coil No. 3150**

| | |
|---|---|
| AlabamaCity,Ala. R2 | $10.26 |
| Atlanta A11 | 10.36 |
| Bartonville,Ill. K4 | 10.36 |
| Buffalo W12 | 10.26 |
| Chicago W13 | 10.26 |
| Crawfordsville,Ind. M8 | 10.36 |
| Donora,Pa. A7 | 10.26 |
| Duluth A7 | 10.26 |
| Fairfield,Ala. T2 | 10.26 |
| Houston S5 | 10.51 |
| Jacksonville,Fla. M8 | 10.82 |
| Johnstown,Pa. B2 | 10.26 |
| Joliet,Ill. A7 | 10.26 |
| KansasCity,Mo. S5 | 10.51 |
| Kokomo,Ind. C16 | 10.36 |
| LosAngeles B3 | 11.05 |
| Minnequa,Colo. C10 | 10.51 |
| Pittsburg,Calif. C11 | 11.04 |
| S.Chicago,Ill. R2 | 10.26 |
| S.SanFrancisco C10 | 11.04 |
| SparrowsPt.,Md. B2 | 10.36 |
| Sterling,Ill. (37) N15 | 10.36 |

**Coil No. 6500 Stand.**

| | |
|---|---|
| AlabamaCity,Ala. R2 | $10.60 |
| Atlanta A11 | 10.70 |
| Bartonville,Ill. K4 | 10.70 |
| Buffalo W12 | 10.60 |
| Chicago W13 | 10.60 |
| Crawfordsville,Ind. M8 | 10.70 |
| Donora,Pa. A7 | 10.60 |
| Duluth A7 | 10.60 |
| Fairfield,Ala. T2 | 10.60 |
| Houston S5 | 10.85 |
| Jacksonville,Fla. M8 | 11.16 |
| Johnstown,Pa. B2 | 10.60 |
| Joliet,Ill. A7 | 10.60 |
| KansasCity,Mo. S5 | 10.85 |
| Kokomo,Ind. C16 | 10.70 |
| LosAngeles B3 | 11.40 |
| Minnequa,Colo. C10 | 10.85 |
| Pittsburg,Calif. C11 | 11.40 |
| S.Chicago,Ill. R2 | 10.60 |
| S.SanFrancisco C10 | 11.40 |
| SparrowsPt.,Md. B2 | 10.70 |
| Sterling,Ill.(37) N15 | 10.70 |

**Coil No. 6500 Interim**

| | |
|---|---|
| AlabamaCity,Ala. R2 | $10.65 |
| Atlanta A11 | 10.75 |
| Bartonville,Ill. K4 | 10.75 |
| Buffalo W12 | 10.65 |
| Chicago W13 | 10.65 |
| Crawfordsville,Ind. M8 | 10.75 |
| Donora,Pa. A7 | 10.65 |
| Duluth A7 | 10.65 |
| Fairfield,Ala. T2 | 10.65 |
| Houston S5 | 10.90 |
| Jacksonville,Fla. M8 | 11.21 |
| Johnstown,Pa. B2 | 10.65 |
| Joliet,Ill. A7 | 10.65 |
| KansasCity,Mo. S5 | 10.90 |
| Kokomo,Ind. C16 | 10.75 |
| LosAngeles B3 | 11.45 |
| Minnequa,Colo. C10 | 10.90 |
| Pittsburg,Calif. C11 | 11.45 |
| S.Chicago,Ill. R2 | 10.65 |
| S.SanFrancisco C10 | 11.45 |
| SparrowsPt.,Md. B2 | 10.75 |
| Sterling,Ill.(37) N15 | 10.75 |

**BALE TIES, Single Loop** — Col.

| | |
|---|---|
| AlabamaCity,Ala. R2 | 212 |
| Atlanta A11* | 214 |
| Bartonville,Ill. K4 | 214 |
| Crawfordsville,Ind. M8 | 214 |
| Donora,Pa. A7 | 212 |
| Duluth A7 | 212 |
| Fairfield,Ala. T2 | 212 |
| Houston S5 | 217 |
| Jacksonville,Fla. M8 | 219 |
| Joliet,Ill. A7 | 212 |
| KansasCity,Mo. S5 | 217 |
| Kokomo,Ind. C16 | 214 |
| Minnequa,Colo. C10 | 217 |
| Pittsburg,Calif. C11 | 236 |
| S.SanFrancisco C10 | 236 |
| SparrowsPt.,Md. B2 | 214 |
| Sterling,Ill.(7) N15 | 214 |

**FENCE POSTS**

| | |
|---|---|
| Birmingham C15 | 172 |
| ChicagoHts.,Ill. C2, I-2 | 172 |
| Duluth A7 | 172 |
| Franklin,Pa. F5 | 172 |
| Huntington,W.Va. C15 | 172 |
| Johnstown,Pa. B2 | 172 |
| Marion,O. P11 | 172 |
| Minnequa,Colo. C10 | 177 |
| Sterling,Ill.(1) N15 | 172 |
| Tonawanda,N.Y. B12 | 174 |

**WIRE, Barbed** — Col.

| | |
|---|---|
| AlabamaCity,Ala. R2 | 193** |
| Aliquippa,Pa. J5 | 190§ |
| Atlanta A11 | 198* |
| Bartonville,Ill. K4 | 198 |
| Crawfordsville,Ind. M8 | 198 |
| Donora,Pa. A7 | 193† |
| Duluth A7 | 193† |
| Fairfield,Ala. T2 | 193† |
| Houston S5 | 198** |
| Jacksonville,Fla. M8 | 203 |
| Johnstown,Pa. B2 | 196§ |
| Joliet,Ill. A7 | 193† |
| KansasCity,Mo. S5 | 198** |
| Kokomo,Ind. C16 | 195† |
| Minnequa,Colo. C10 | 198** |
| Monessen,Pa. P7 | 196§ |
| Pittsburg,Calif. C11 | 213† |
| Rankin,Pa. A7 | 193† |
| S.Chicago,Ill. R2 | 193** |
| S.SanFrancisco C10 | 213** |
| SparrowsPoint,Md. B2 | 198§ |
| Sterling,Ill.(7) N15 | 198†† |

**WOVEN FENCE, 9-15 Ga.** — Col.

| | |
|---|---|
| Ala.City,Ala. R2 | 187** |
| Aliq'ppa,Pa.9-14½ga.J5 | 190§ |
| Atlanta A11 | 192* |
| Bartonville,Ill. K4 | 192 |
| Crawfordsville,Ind. M8 | 192 |
| Donora,Pa. A7 | 187† |
| Duluth A7 | 187† |
| Fairfield,Ala. T2 | 187† |
| Houston S5 | 192** |
| Jacksonville,Fla. M8 | 197 |
| Johnstown,Pa.(43) B2 | 190§ |
| Joliet,Ill. A7 | 187† |
| KansasCity,Mo. S5 | 192** |
| Kokomo,Ind. C16 | 189† |
| Minnequa,Colo. C10 | 192** |
| Pittsburg,Calif. C11 | 210† |
| Rankin,Pa. A7 | 187† |
| S.Chicago,Ill. R2 | 187** |
| Sterling,Ill.(7) N15 | 192†† |

| **WIRE (16 gage)** | An'ld Stone | Galv. Stone |
|---|---|---|
| Ala.City,Ala.R2 | 17.15 | 18.70** |
| Aliq'ppa,Pa. J5 | 17.15 | 18.95 |
| Bartonville K4 | 17.25 | 19.05 |
| Cleveland A7 | 17.15 | .... |
| Crawf'dsville MS | 17.25 | 19.05 |
| Fostoria,O. S1 | 17.65 | 19.20† |
| Houston S5 | 17.40 | 18.95** |
| Jacksonville MS | 17.50 | 19.30 |
| Johnstown B2 | 17.15 | 18.95§ |
| Kan.City,Mo. S5 | 17.40 | .... |
| Kokomo C16 | 17.25 | 18.80† |
| Minnequa C10 | 17.40 | 18.95** |
| Pitm'r,Mass.W12 | 17.45 | 19.00† |
| Pitts.,Calif. C11 | 17.50 | 19.05† |
| SparrowsPt. B2 | 17.25 | 19.05§ |
| Sterling(37)N15 | 17.25 | 19.05†† |
| Waukegan A7 | 17.15 | 18.70† |
| Worcester A7 | 17.45 | .... |

**WIRE, Merchant Quality**

| | An'ld Galv. |
|---|---|
| Ala.City,Ala. R2 | 8.65 9.20** |
| Aliquippa J5 | 8.65 9.325§ |
| Atlanta(48) A11 | 8.75 9.425* |
| Bartonville(48) K4 | 8.75 9.425 |
| Buffalo W12 | 8.65 9.20† |
| Cleveland A7 | 8.65 .... |
| Crawfordsville M8 | 8.75 9.425 |
| Donora,Pa. A7 | 8.65 9.20† |
| Duluth A7 | 8.65 9.20† |
| Fairfield T2 | 8.65 9.20† |
| Houston(48) S5 | 8.90 9.45** |
| Jacks'ville,Fla. M8 | 9.00 9.675§ |
| Johnstown B2(48) | 8.65 9.325§ |
| Joliet,Ill. A7 | 8.65 9.20† |
| Kans.City(48) S5 | 8.90 9.45** |
| Kokomo C16 | 8.75 9.30† |
| LosAngeles B3 | 9.60 10.275§ |
| Minnequa C10 | 8.90 9.45** |
| Monessen P7(48) | 8.65 9.325§ |
| Palmer,Mass. W12 | 8.95 9.50† |
| Pitts.Calif. C11 | 9.60 10.15† |
| Rankin,Pa. A7 | 8.65 9.20† |
| S.Chicago R2 | 8.65 9.20** |
| S.SanFran. C10 | 9.60 10.15** |
| Spar'wsPt.B2(48) | 8.75 9.425§ |
| Sterling(48) N15 | 8.90 9.575†† |
| Sterling(1) (48) | 8.80 9.475†† |
| Struthers,O. Y1 | 8.65 9.30† |
| Worcester,Mass.A7 | 8.95 9.50† |

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

## FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

**BOLTS**

**Carriage, Machine Bolts**
Full Size Body (cut thread)

| | |
|---|---|
| ½ in. and smaller: | |
| 6 in. and shorter | 49.0 |
| Longer than 6 in. | 39.0 |
| ⅝ in. thru 1 in.: | |
| 6 in. and shorter | 39.0 |
| Longer than 6 in. | 35.0 |
| 1⅛ in. and larger: | |
| All lengths | 35.0 |

Undersized Body (rolled thread)

| | |
|---|---|
| ½ in. and smaller: | |
| 6 in. and shorter | 49.0 |

**Carriage, Machine, Lag Bolts**
**Hot Galvanized:**

| | |
|---|---|
| ½ in. and smaller: | |
| 6 in. and shorter | 29.0 |
| Longer than 6 in. | 15.0 |
| ⅝ in. and larger: | |
| All lengths | 12.0 |

**Lag Bolts** (all diam.)

| | |
|---|---|
| 6 in. and shorter | 49.0 |
| Longer than 6 in. | 39.0 |

**Plow and Tap Bolts**

| | |
|---|---|
| ½ in. and smaller by 6 in. and shorter | 49.0 |
| Larger than ½ in. or longer than 6 in. | 39.0 |

**Blank Bolts** 39.0
**Step, Elevator, Tire Bolts** 49.0

**Stove Bolts, Slotted:**

| | |
|---|---|
| ⅛ to ¼ in. incl., 3 in. and shorter | 55.0 |
| ⅝ to ½ in., inclusive | 55.0 |

**NUTS**

**Reg. & Heavy Square Nuts:**

| | |
|---|---|
| All sizes | 55.5 |

**Square Nuts, Reg. & Heavy, Hot Galvanized:**

| | |
|---|---|
| All sizes | 41.0 |

**Hex Nuts, Reg. & Heavy, Hot Pressed:**

| | |
|---|---|
| ⅛ in. and smaller | 60.5 |
| ⅞ in. to 1 in., incl. | 55.5 |
| 1⅛ in. to 1½ in., incl. | 58.5 |
| 1⅝ in. and larger | 53.5 |

**Hex Nuts, Reg. & Heavy, Cold Punched:**

| | |
|---|---|
| ⅛ in. and smaller | 60.5 |
| ⅞ in. to 1½ in., incl. | 55.5 |
| 1⅝ in. and larger | 53.5 |

**Hex Nuts, All Types, Hot Galvanized:**

| | |
|---|---|
| ⅛ in. and smaller | 46.5 |
| ⅞ in. to 1 in., incl. | 41.5 |
| 1⅛ in. to 1½ in., incl. | 46.5 |

**Hex Nuts, Semifinished, Heavy (Incl. Slotted):**

| | |
|---|---|
| ¾ in. and smaller | 60.5 |
| ⅞ in. to 1½ in., incl. | 55.5 |
| 1⅝ in. and larger | 53.5 |

**Hex Nuts, Finished (Incl. Slotted and Castellated):**

| | |
|---|---|
| 1 in. and smaller | 63.0 |
| 1⅛ in. to 1½ in., incl. | 59.0 |
| 1⅝ in. and larger | 53.5 |

**Semifinished Hex Nuts, Reg. (Incl. Slotted):**

| | |
|---|---|
| ⅝ in. and smaller | 60.5 |
| ¾ in. to 1 in., incl. | 63.0 |
| 1⅛ to 1½ in., incl. | 59.0 |
| 1⅝ in. and larger | 53.5 |

**CAP AND SETSCREWS**

(Base discounts, packages, per cent off list, f.o.b. mill)

**Hex Head Capscrews, Coarse or Fine Thread, Bright:**

| | |
|---|---|
| 6 in. and shorter: | |
| ⅝ in. and smaller | 40.0 |
| ¾, ⅞, and 1 in. diam. | 22.0 |
| Longer than 6 in.: | |
| ⅝ in. and smaller | 8.0 |
| ¾, ⅞, and 1 in. diam. | + 6.0 |

**High Carbon, Heat Treated:**

| | |
|---|---|
| 6 in. and shorter: | |
| ⅝ in. and smaller | 26.0 |
| ¾, ⅞, and 1 in. diam. | 3.0 |
| Longer than 6 in.: | |
| ⅝ in. and smaller | + 13.0 |
| ¾, ⅞, and 1 in. diam. | + 32.0 |

**Flat Head Capscrews:**

| | |
|---|---|
| ¾ in. and smaller | + 76.0 |

**Setscrews, Square Head, Cup Point, Coarse Thread:**

| | |
|---|---|
| Through 1 in. diam.: | |
| 6 in. and shorter | Net |
| Longer than 6 in. | + 23 |

## RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in.; larger 12.25
⅛ in. under; List less 19%

## BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

| O.D. In. | B.W. Gage | Seamless H.R. | Seamless C.D. | Elec. Weld H.R. |
|---|---|---|---|---|
| 1 | 13 | .... | 25.98 | 23.54 |
| 1¼ | 13 | .... | 30.78 | 23.36 |
| 1½ | 13 | 29.03 | 34.01 | 25.83 |
| 1¾ | 13 | 34.29 | 40.18 | 30.51 |
| 2 | 13 | 38.44 | 45.05 | 34.20 |
| 2¼ | 13 | 43.29 | 50.75 | 38.52 |
| 2½ | 12 | 46.99 | 55.06 | 41.81 |
| 2¾ | 12 | 51.76 | 60.65 | 46.05 |
| 2½ | 12 | 56.04 | 65.67 | 49.88 |
| 3 | 12 | 59.76 | 70.03 | 53.19 |

## RAILWAY MATERIALS

| Rails | Standard No. 1 | Standard No. 2 | Tee Rails All No. 2 | Tee Rails 60-lb Under |
|---|---|---|---|---|
| Bessemer,Pa. U5 | 5.525 | 5.425 | .... | 6.50 |
| Ensley,Ala. T2 | 5.525 | 5.425 | .... | 6.50 |
| Fairfield,Ala. T2 | .... | .... | .... | 6.50 |
| Gary,Ind. U5 | 5.525 | 5.425 | .... | .... |
| Huntington,W.Va. C15 | .... | .... | .... | 6.50 |
| IndianaHarbor,Ind. I-2 | 5.525 | 5.425 | 5.475 | .... |
| Johnstown,Pa. B2 | .... | .... | .... | (16)6.50 |
| Lackawanna,N.Y. B2 | 5.525 | 5.425 | .... | 6.50 |
| Minnequa,Colo. C10 | 5.525 | 5.425 | .... | 7.00 |
| Steelton,Pa. B2 | 5.525 | 5.425 | .... | .... |
| Williamsport,Pa. S19 | .... | .... | .... | 6.50 |

**TIE PLATES**

| | |
|---|---|
| Fairfield,Ala. T2 | 6.60 |
| Gary,Ind. U5 | 6.60 |
| Ind.Harbor,Ind. I-2 | 6.60 |
| Lackawanna,N.Y. B2 | 6.60 |
| Minnequa,Colo. C10 | 6.60 |
| Seattle B3 | 6.75 |
| Steelton,Pa. B2 | 6.60 |
| Torrance,Calif. C11 | 6.75 |

**JOINT BARS**

| | |
|---|---|
| Bessemer,Pa. U5 | 6.975 |
| Fairfield,Ala. T2 | 6.975 |
| Ind.Harbor,Ind. I-2 | 6.975 |
| Joliet,Ill. U5 | 6.975 |
| Lackawanna,N.Y. B2 | 6.975 |
| Minnequa,Colo. C10 | 6.975 |
| Steelton,Pa. B2 | 6.975 |

**AXLES**

| | |
|---|---|
| Ind.Harbor,Ind. S13 | 8.775 |
| Johnstown,Pa. B2 | 8.775 |

**TRACK BOLTS, Untreated**

| | |
|---|---|
| Cleveland R2 | 14.75 |
| KansasCity,Mo. S5 | 14.75 |
| Lebanon,Pa. B2 | 14.75 |
| Minnequa,Colo. C10 | 14.75 |
| Pittsburgh P14 | 14.75 |
| Seattle B3 | 15.25 |

**SCREW SPIKES**

| | |
|---|---|
| Lebanon,Pa. B2 | 14.50 |

**STANDARD TRACK SPIKES**

| | |
|---|---|
| Fairfield,Ala. T2 | 9.75 |
| Ind.Harbor,Ind. I-2, Y1 | 9.75 |
| KansasCity,Mo. S5 | 9.75 |
| Lebanon,Pa. B2 | 9.75 |
| Minnequa,Colo. C10 | 9.75 |
| Pittsburgh J5 | 9.75 |
| Seattle B3 | 10.25 |
| S.Chicago,Ill. R2 | 9.75 |
| Struthers,O. Y1 | 9.75 |
| Youngstown R2 | 9.75 |

## Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.65c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 9.143 to 0.249 in.; for gage 0.142 and lighter, 8.50c.
(15) ¾" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) Plus 1c per 100 lb.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.60c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, - 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.025"; 0.025" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.30c, over 3½ in. and other shapes.

## SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

| Size—Inches | ¼ | | ⅜ | | ½ | | ¾ | | 1 | | 1¼ | | 1½ | | 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| List Per Ft | 37c | | 58.5c | | 76.5c | | 92c | | $1.09 | | $1.48 | | $1.92 | | | |
| Pounds Per Ft | 0.68 | | 0.82 | | 1.02 | | 1.20 | | 1.68 | | 2.27 | | 2.72 | | | |
| | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* |
| Aliquippa, Pa. J5 | +9.25 | +24.25 | +2.75 | +19.5 | +0.25 | +17 | 1.25 | +15.5 | 1.25 | +15.5 | 1 | +15.75 | 3.5 | +13.25 | | |
| Ambridge, Pa. N2 | +9.25 | ..... | +2.75 | ..... | +0.25 | ..... | 1.25 | ..... | 1.25 | ..... | 1 | ..... | 3.5 | ..... | | |
| Lorain, O. N3 | +9.25 | +24.25 | +2.75 | +19.5 | +0.25 | +17 | 1.25 | +15.5 | 1.25 | +15.5 | 1 | +15.75 | 3.5 | +13.25 | | |
| Youngstown Y1 | +9.25 | +24.25 | +2.75 | +19.5 | +0.25 | +17 | 1.25 | +15.5 | 1.25 | +15.5 | 1 | +15.75 | 3.5 | +13.25 | | |

## ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Youngstown R2 | +9.25 | +24.25 | +2.75 | +19.5 | +0.25 | +17 | 1.25 | +15.5 | 1.25 | +15.5 | 1 | +15.75 | 3.5 | +13.25 | | |

## BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

| Size—Inches | ⅛ | | ¼ | | ⅜ | | ½ | | ¾ | | 1 | | 1¼ | | 1½ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| List Per Ft | 5.5c | | 6c | | 6c | | 8.5c | | 11.5c | | 17c | | 23c | | | |
| Pounds Per Ft | 0.24 | | 0.42 | | 0.57 | | 0.85 | | 1.13 | | 1.68 | | 2.28 | | | |
| | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* |
| Aliquippa, Pa. J5 | ..... | ..... | ..... | ..... | ..... | ..... | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 | ..... | ..... |
| Alton, Ill. L1 | ..... | ..... | ..... | ..... | ..... | ..... | 3.25 | +12 | 6.25 | +8 | 9.75 | +3.5 | 12.25 | +2.75 | ..... | ..... |
| Benwood, W. Va. W10 | 4.5 | +22 | +7.5 | +31 | +18 | +39.5 | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 | ..... | ..... |
| Butler, Pa. F6 | 5.5 | +21 | +6.5 | +30 | +17 | +38.5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Etna, Pa. N2 | ..... | ..... | ..... | ..... | ..... | ..... | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 | ..... | ..... |
| Fairless, Pa. N3 | ..... | ..... | ..... | ..... | ..... | ..... | 3.25 | +12 | 6.25 | +8 | 9.75 | +3.5 | 12.25 | +2.75 | ..... | ..... |
| Fontana, Calif. K1 | ..... | ..... | ..... | ..... | ..... | ..... | 8.25 | +25.5 | +5.25 | +19.5 | +1.75 | +15 | 0.75 | +14.25 | ..... | ..... |
| Indiana Harbor, Ind. Y1 | ..... | ..... | ..... | ..... | ..... | ..... | 4.25 | +11 | 7.25 | +7 | 10.75 | +2.5 | 13.25 | +3.25 | ..... | ..... |
| Lorain, O. N3 | ..... | ..... | ..... | ..... | ..... | ..... | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 | ..... | ..... |
| Sharon, Pa. S4 | 5.5 | +21 | +6.5 | +30 | +17 | +38.5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Sharon, Pa. M6 | ..... | ..... | ..... | ..... | ..... | ..... | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 | ..... | ..... |
| Sparrows Pt., Md. B2 | 3.5 | +23 | +8.5 | +32 | +19 | +40.5 | 3.25 | +12 | 6.25 | +8 | 9.75 | +3.5 | 12.25 | +2.75 | ..... | ..... |
| Wheatland, Pa. W9 | 5.5 | +21 | +6 | +30 | +17 | +38.5 | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 | ..... | ..... |
| Youngstown R2, Y1 | ..... | ..... | ..... | ..... | ..... | ..... | 5.25 | +10 | 8.25 | +6 | 11.75 | +1.5 | 14.25 | +0.75 | ..... | ..... |

| Size—Inches | 1½ | | 2 | | 2½ | | 3 | | 3½ | | 4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| List Per Ft | 27.2c | | 37c | | 58.5c | | 76.5c | | 92c | | $1.09 | |
| Pounds Per Ft | 2.73 | | 3.68 | | 5.82 | | 7.62 | | 9.20 | | 10.89 | |
| | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* | Blk | Galv* |
| Aliquippa, Pa. J5 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | ..... | ..... | ..... | ..... |
| Alton, Ill. L1 | 12.75 | +1.75 | 13.25 | +1.25 | 14.75 | +1.5 | 14.75 | +1.5 | ..... | ..... | ..... | ..... |
| Benwood, W. Va. W10 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | 6.25 | +10.5 | 6.25 | +10.5 |
| Etna, Pa. N2 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | 6.25 | +10.5 | 6.25 | +10.5 |
| Fairless, Pa. N3 | 12.75 | +1.75 | 13.25 | +1.25 | 14.75 | +1.5 | 14.75 | +1.5 | 4.25 | +12.5 | 4.25 | +12.5 |
| Fontana, Calif. K1 | 1.25 | +13.25 | 1.75 | +12.75 | 3.25 | +13 | 3.25 | +13 | +7.25 | +24 | +7.25 | +24 |
| Indiana Harbor, Ind. Y1 | 13.75 | +0.75 | 14.25 | +0.25 | 15.75 | +0.5 | 15.25 | +0.5 | 5.25 | +11.5 | 5.25 | +11.5 |
| Lorain, O. N3 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | ..... | ..... | ..... | ..... |
| Sharon, Pa. M6 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | ..... | ..... | ..... | ..... |
| Sparrows Pt., Md. B2 | 12.75 | +1.75 | 13.25 | +1.25 | 14.75 | +1.5 | 14.75 | +1.5 | 4.25 | +12.5 | 4.25 | +12.5 |
| Wheatland, Pa. W9 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | 6.25 | +10.5 | 6.25 | +10.5 |
| Youngstown R2, Y1 | 14.75 | 0.25 | 15.25 | 0.75 | 16.75 | 0.5 | 16.75 | 0.5 | 6.25 | +10.5 | 6.25 | +10.5 |

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

# Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

| AISI Type | —Rerolling— Ingot | Slabs | Forging Billets | H.R. Strip | H.R. Rods; C.F. Wire | Bars; Structural Shapes | Plates | Sheets | C.R. Strip; Flat Wire |
|---|---|---|---|---|---|---|---|---|---|
| 201 | 22.00 | 27.00 | ..... | 36.00 | 40.00 | 42.00 | 44.25 | 48.50 | 45.00 |
| 202 | 23.75 | 30.25 | 36.50 | 39.00 | 40.75 | 43.00 | 45.00 | 49.25 | 49.25 |
| 301 | 23.25 | 28.00 | 37.25 | 37.25 | 42.00 | 44.25 | 46.25 | 51.25 | 47.50 |
| 302 | 25.25 | 31.50 | 38.00 | 40.50 | 42.75 | 45.00 | 47.25 | 52.00 | 52.00 |
| 302B | 25.50 | 32.75 | 40.75 | 45.75 | 45.00 | 47.25 | 49.50 | 57.00 | 57.00 |
| 303 | ..... | 32.00 | 41.00 | 46.00 | 45.50 | 48.00 | 50.00 | 56.75 | 56.75 |
| 304 | 27.00 | 33.25 | 40.50 | 44.25 | 45.25 | 47.75 | 50.75 | 55.00 | 55.00 |
| 304L | ..... | ..... | 48.25 | 51.50 | 53.00 | 55.50 | 58.50 | 63.25 | 62.75 |
| 305 | 28.50 | 36.75 | 42.50 | 47.50 | 45.25 | 47.75 | 51.25 | 58.75 | 58.75 |
| 308 | 30.75 | 38.25 | 47.25 | 50.25 | 52.75 | 55.75 | 60.25 | 63.00 | 63.00 |
| 309 | 39.75 | 49.50 | 57.75 | 64.50 | 63.75 | 67.00 | 71.00 | 80.50 | 80.50 |
| 310 | 49.75 | 61.50 | 78.00 | 84.25 | 86.50 | 91.00 | 92.75 | 96.75 | 96.75 |
| 314 | ..... | ..... | 77.50 | ..... | 86.50 | 91.00 | 92.75 | 99.00 | 104.25 |
| 316 | 39.75 | 49.50 | 62.25 | 69.25 | 69.25 | 73.00 | 76.75 | 80.75 | 80.75 |
| 316L | ..... | 55.50 | 70.00 | 76.50 | 77.00 | 80.75 | 84.50 | 89.25 | 88.50 |
| 317 | 48.00 | 60.00 | 76.75 | 88.25 | 86.25 | 90.75 | 93.50 | 101.00 | 101.00 |
| 321 | 32.25 | 40.00 | 47.00 | 53.50 | 52.50 | 55.50 | 59.75 | 65.50 | 65.50 |
| 330 | ..... | ..... | 106.75 | ..... | 95.25 | 106.75 | 105.50 | 108.00 | 149.25 |
| 18-8 CbTa | 37.00 | 46.50 | 55.75 | 63.50 | 61.50 | 64.75 | 69.75 | 79.25 | 79.25 |
| 403 | ..... | ..... | 32.00 | ..... | 35.75 | 37.75 | 40.25 | 48.25 | 48.25 |
| 405 | 19.50 | 25.50 | 29.75 | 36.00 | 33.50 | 35.25 | 37.50 | 46.75 | 46.75 |
| 410 | 16.75 | 21.50 | 28.25 | 31.00 | 32.00 | 33.75 | 35.00 | 40.25 | 40.25 |
| 416 | ..... | ..... | 28.75 | ..... | 32.50 | 34.25 | 36.00 | 48.25 | 48.25 |
| 420 | 26.00 | 33.50 | 34.25 | 41.75 | 39.25 | 41.25 | 45.25 | 52.00 | 62.00 |
| 430 | 17.00 | 21.75 | 28.75 | 32.00 | 32.50 | 34.25 | 36.00 | 40.75 | 40.75 |
| 430F | ..... | ..... | 29.50 | ..... | 33.00 | 34.75 | 36.75 | 51.75 | 42.00 |
| 431 | ..... | 28.75 | 37.75 | ..... | 42.00 | 44.25 | 46.00 | 56.00 | 56.00 |
| 446 | ..... | ..... | 39.25 | 59.00 | 44.25 | 46.50 | 47.75 | 70.00 | 70.00 |

**Stainless Steel Producers Are:** Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co., Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

# Clad Steel

| | Plates 5% | Plates Carbon Base 10% | Plates Carbon Base 15% | Plates Carbon Base 20% | Sheets Carbon Base 20% |
|---|---|---|---|---|---|
| Stainless | | | | | |
| 302 | ..... | ..... | ..... | ..... | 37.50 |
| 304 | 34.70 | 37.95 | 42.25 | 46.70 | 39.75 |
| 304L | 36.90 | 40.55 | 45.10 | 49.85 | ..... |
| 316 | 40.35 | 44.50 | 49.50 | 54.50 | 58.25 |
| 316L | 45.65 | 49.35 | 54.70 | 60.10 | ..... |
| 316 Cb | 47.30 | 53.80 | 61.45 | 69.10 | ..... |
| 321 | 36.60 | 40.05 | 44.60 | 49.30 | 47.25 |
| 347 | 38.25 | 42.40 | 47.55 | 52.80 | 57.00 |
| 405 | 28.60 | 29.85 | 33.35 | 36.85 | ..... |
| 410 | 28.15 | 29.55 | 33.10 | 36.70 | ..... |
| 430 | 28.30 | 29.80 | 33.55 | 37.25 | ..... |
| Inconel | 48.00 | 50.35 | 70.15 | 80.85 | ..... |
| Nickel | 41.65 | 51.95 | 62.30 | 72.70 | ..... |
| Nickel, Low Carbon | 41.95 | 52.60 | 63.30 | 74.15 | ..... |
| Monel | 43.35 | 53.55 | 63.80 | 74.05 | ..... |
| Copper* | ..... | ..... | ..... | ..... | 46.00 |

| | Strip, Carbon Base —Cold Rolled— 10% | Both Sides |
|---|---|---|
| Copper* | 33.10 | 38.75 |

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

# Tool Steel

| Grade | $ per lb | Grade | $ per lb |
|---|---|---|---|
| Regular Carbon | 0.305 | Cr-Hot Work | 0.475 |
| Extra Carbon | 0.360 | W-Cr Hot Work | 0.500 |
| Special Carbon | 0.475 | V-Cr Hot Work | 0.520 |
| Oil Hardening | 0.475 | Hi-Carbon-Cr | 0.925 |

| Grade by Analysis (%) W | Cr | V | Co | Mo | $ per lb |
|---|---|---|---|---|---|
| 20-25 | 4.25 | 1.6 | 12.25 | ..... | 4.285 |
| 18-25 | 4.25 | 1 | 4.75 | ..... | 2.500 |
| 18 | 4 | 2 | 9 | ..... | 2.870 |
| 18 | 4 | 2 | ..... | ..... | 1.960 |
| 18 | 4 | 1 | ..... | ..... | 1.795 |
| 6 | 3.5 | ..... | ..... | ..... | 1.395 |
| 13.5 | 4 | 3 | ..... | ..... | 2.060 |
| 13.75 | 3.75 | 2 | 5 | ..... | 2.440 |
| 6.4 | 4.5 | 1.9 | ..... | 5 | 1.300 |
| 6 | 4 | 3 | ..... | 6 | 1.545 |
| 1.5 | 1 | 1 | ..... | 8.5 | 1.155 |

Tool steel producers include: A4, A8, B2, B8, C1, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

# Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

| | Basic | No. 2 Foundry | Malle-able | Besse-mer |
|---|---|---|---|---|
| *Birmingham District* | | | | |
| Birmingham R2 | 62.00 | 62.50‡ | .... | .... |
| Birmingham U6 | .... | 62.50‡ | 66.50 | .... |
| Woodward,Ala. W15 | 62.00** | 62.50‡ | 66.50 | .... |
| Cincinnati, deld. | .... | 70.20 | .... | .... |
| *Buffalo District* | | | | |
| Buffalo H1, R2 | 66.00 | 66.50 | 67.00 | 67.50 |
| N.Tonawanda,N.Y. T9 | .... | 66.50 | 67.00 | 67.50 |
| Tonawanda,N.Y. W12 | 66.00 | 66.50 | 67.00 | 67.50 |
| Boston, deld. | 77.29 | 77.79 | 78.29 | .... |
| Rochester,N.Y., deld. | 69.02 | 69.52 | 70.02 | .... |
| Syracuse,N.Y., deld. | 70.12 | 70.62 | 71.12 | .... |
| *Chicago District* | | | | |
| Chicago I-3 | 66.00 | 66.50 | 66.50 | 67.00 |
| S.Chicago,Ill. R2 | 66.00 | 66.50 | 66.50 | 67.00 |
| S.Chicago,Ill. W14 | 66.00 | .... | 66.50 | 67.00 |
| Milwaukee, deld. | 69.02 | 69.52 | 69.52 | 70.02 |
| Muskegon,Mich., deld. | .... | 74.52 | 74.52 | .... |
| *Cleveland District* | | | | |
| Cleveland R2, A7 | 66.00 | 66.50 | 66.50 | 67.00 |
| Akron,Ohio, deld. | 69.12 | 69.62 | 69.62 | 70.12 |
| *Mid-Atlantic District* | | | | |
| Birdsboro,Pa. B10 | 68.00 | 68.50 | 69.00 | 69.50 |
| Chester,Pa. P4 | 68.00 | 68.50 | 69.00 | .... |
| Swedeland,Pa. A3 | 68.00 | 68.50 | 69.00 | 69.50 |
| NewYork, deld. | .... | 75.50 | 76.00 | .... |
| Newark,N.J., deld. | 72.69 | 73.19 | 73.69 | 74.19 |
| Philadelphia, deld. | 70.41 | 70.91 | 71.41 | 71.99 |
| Troy,N.Y. R2 | 68.00 | 68.50 | 69.00 | 69.50 |
| *Pittsburgh District* | | | | |
| NevilleIsland,Pa. P6 | 66.00 | 66.50 | 66.50 | 67.00 |
| Pittsburgh (N&S sides), Aliquippa, deld. | .... | 67.95 | 67.95 | 68.48 |
| McKeesRocks,Pa., deld. | .... | 67.60 | 67.60 | 68.13 |
| Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld. | .... | 68.26 | 68.26 | 68.79 |
| Verona,Trafford,Pa., deld. | 68.29 | 68.82 | 68.82 | 69.35 |
| Brackenridge,Pa., deld. | 68.60 | 69.10 | 69.10 | 69.63 |
| Midland,Pa. C18 | 66.00 | .... | .... | .... |
| *Youngstown District* | | | | |
| Hubbard,Ohio Y1 | .... | .... | 66.50 | .... |
| Sharpsville,Pa. S6 | 66.00 | .... | 66.50 | 67.00 |
| Youngstown Y1 | .... | .... | 66.50 | 67.00 |
| Mansfield,Ohio, deld. | 70.90 | .... | 71.40 | 71.90 |
| Duluth I-3 | 66.00 | 66.50 | 66.50 | 67.00 |
| Erie,Pa. I-3 | 66.00 | 66.50 | 66.50 | 67.00 |
| Everett,Mass. E1 | 67.50 | 68.00 | 68.50 | .... |
| Fontana,Calif. K1 | 75.00 | 75.50 | .... | .... |
| Geneva,Utah C11 | 66.00 | 66.50 | .... | .... |
| GraniteCity,Ill. G4 | 67.90 | 68.40 | 68.90 | .... |
| Ironton,Utah C11 | 66.00 | 66.50 | .... | .... |
| Minnequa,Colo. C10 | 68.00 | 68.50 | 69.00 | .... |
| Rockwood,Tenn. T3 | .... | 62.50‡ | 66.50 | .... |
| Toledo,Ohio I-3 | 66.00 | 66.50 | 66.50 | 67.00 |
| Cincinnati, deld. | 72.54 | 73.04 | .... | .... |

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

## PIG IRON DIFFERENTIALS

*Silicon:* Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

*Manganese:* Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

*Nickel:* Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

## BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

| | |
|---|---|
| Jackson,Ohio I-3, J1 | $78.00 |
| Buffalo H1 | 79.25 |

## ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

| | |
|---|---|
| CalvertCity,Ky. P15 | $99.00 |
| NiagaraFalls,N.Y. P15 | 99.00 |
| Keokuk,Iowa Open-hearth & Fdry. $9 freight allowed K2 | 103.50 |
| Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2 | 106.50 |

## LOW PHOSPHORUS PIG IRON, Gross Ton

| | |
|---|---|
| Lyles,Tenn. T3 (Phos. 0.035% max) | $78.50 |
| Rockwood,Tenn. T3 (Phos. 0.035% max) | 78.50 |
| Troy,N.Y. R2 (Phos. 0.035% max) | 74.00 |
| Philadelphia, deld. | 82.67 |
| Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max) | 71.00 |
| Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max) | 71.00 |
| Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max) | 71.00 |
| NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max) | 71.00 |

# Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Chattanooga, Houston, Seattle, no charge.

| | SHEETS | | | | STRIP | BARS | | | Standard Structural Shapes | PLATES | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Hot-Rolled | Cold-Rolled | Gal. 10 Ga.† | Stainless Type 302 | Hot-Rolled* | H.R. Rounds | C.F. Rds.‡ | H.R. Alloy 4140††[5] | | Carbon | Floor |
| Atlanta | 8.59§ | 9.86§ | .... | .... | 8.64 | 9.01 | 10.68 | .... | 9.05 | 8.97 | 10.90 |
| Baltimore | 8.28 | 8.88 | 9.68 | .... | 8.76 | 9.06 | 11.34# | 15.18 | 9.19 | 8.66 | 10.14 |
| Birmingham | 8.18 | 9.45 | 11.07 | .... | 8.23 | 8.60 | 10.57 | .... | 8.64 | 8.56 | 10.70 |
| Boston | 9.38 | 10.44 | 11.45 | 53.50 | 9.42 | 9.73 | 12.90# | 15.28 | 9.63 | 9.72 | 11.20 |
| Buffalo | 8.40 | 9.00 | 10.07 | 55.98 | 8.50 | 8.80 | 10.90# | 15.00 | 8.90 | 8.90 | 10.45 |
| Chattanooga | 8.35 | 9.69 | 9.65 | .... | 8.40 | 8.77 | 10.46 | .... | 8.88 | 8.80 | 10.66 |
| Chicago | 8.20 | 9.45 | 10.10 | 53.00 | 8.23 | 8.60 | 8.80 | 14.65 | 8.64 | 8.56 | 9.88 |
| Cincinnati | 8.34 | 9.48 | 10.10 | 52.43 | 8.54 | 8.92 | 9.31 | 14.96 | 9.18 | 8.93 | 10.21 |
| Cleveland | 8.18 | 9.45 | 10.20 | 52.33 | 8.33 | 8.69 | 10.80# | 14.74 | 9.01 | 8.79 | 10.11 |
| Dallas | 7.50 | 8.80 | .... | .... | 7.65 | 7.60 | 11.01 | .... | 9.00 | 9.45 | 10.70 |
| Denver | 9.38 | 11.75 | .... | .... | 9.41 | 9.78 | 11.10 | .... | 7.65 | 8.45 | 9.70 |
| Detroit | 8.43 | 9.70 | 10.45 | 56.50 | 8.58 | 8.90 | 9.15 | 14.91 | 9.18 | 8.91 | 10.13 |
| Erie, Pa. | 8.20 | 9.45 | 9.95[10] | .... | 8.50 | 8.75 | 9.05[10] | .... | 9.00 | 8.85 | 10.10 |
| Houston | 7.10 | 8.40 | 8.45 | 54.32 | 7.25 | 7.20 | 11.10 | 13.50 | 7.25 | 8.05 | 9.30 |
| Jackson, Miss. | 8.52 | 9.79 | .... | .... | 8.57 | 8.94 | 10.68 | .... | 8.97 | 8.90 | 10.74 |
| Los Angeles | 9.60 | 9.40 | 11.70 | 57.60 | 8.55 | 8.70 | 12.00 | .... | 8.60 | 8.55 | 10.70 |
| Memphis, Tenn. | 8.55 | 9.80 | .... | .... | 8.60 | 8.97 | 11.96# | .... | 9.01 | 8.93 | 10.56 |
| Milwaukee | 8.33 | 9.58 | 10.23 | .... | 8.36 | 8.73 | 9.03 | 14.78 | 8.85 | 8.69 | 10.01 |
| Moline, Ill. | 8.55 | 9.80 | 10.45 | .... | 8.58 | 8.95 | 9.15 | .... | 8.99 | 8.91 | .... |
| New York | 8.87 | 10.13 | 10.56 | 53.08 | 9.31 | 9.57 | 12.76# | 15.09 | 9.35 | 9.43 | 10.71 |
| Norfolk, Va. | 8.40 | .... | .... | .... | 9.10 | 9.10 | 12.00 | .... | 9.40 | 8.85 | 10.35 |
| Philadelphia | 8.00 | 8.90 | 9.92 | 52.69 | 8.70 | 8.65 | 11.51# | 15.01 | 8.50 | 8.75 | 9.75** |
| Pittsburgh | 8.18 | 9.45 | 10.45 | 52.00 | 8.33 | 8.60 | 10.80# | 14.65 | 8.64 | 8.56 | 9.88 |
| Portland, Oreg. | 8.50 | 11.20 | 11.55 | 57.38 | 9.55 | 8.65 | 14.50 | 15.95 | 8.65 | 8.30 | 11.50 |
| Richmond, Va. | 8.40 | .... | 10.40 | .... | 9.10 | 9.00 | .... | .... | 9.40 | 8.85 | 10.35 |
| St. Louis | 8.54 | 9.79 | 10.46 | .... | 8.59 | 8.97 | 9.41 | 15.01 | 9.10 | 8.93 | 10.25 |
| St. Paul | 8.79 | 10.04 | 10.71 | .... | 8.84 | 9.21 | 9.66 | .... | 9.38 | 9.30 | 10.49 |
| San Francisco | 9.35 | 10.75 | 11.00 | 55.10 | 10.95 | 9.70 | 11.31# | 16.10 | 9.50 | 9.60 | 12.00 |
| Seattle | 9.95 | 11.15 | 12.20 | 57.38 | 10.00 | 10.10 | 14.05 | 16.35 | 9.80 | 9.70 | 12.10 |
| South'ton, Conn. | 9.07 | 10.33 | 10.71 | .... | 9.48 | 9.74 | .... | .... | 9.57 | 9.57 | 10.91 |
| Spokane | 9.95 | 11.15 | 12.00 | 57.38 | 10.00 | 10.10 | 14.05 | 17.20 | 9.80 | 9.70 | 12.10 |
| Washington | 8.88 | .... | .... | .... | 9.36 | 9.56 | 10.94 | .... | 9.79 | 9.26 | 10.74 |

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **¼ in. and heavier; ††as annealed; ‡over 4 in.; §§over 3 in.; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 5000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [3]—400 to 9999 lb; [8]—1000 to 1999 lb; [8]—2000 to 3999 lb; [10]—2000 lb and over.

# Refractories

**Fire Clay Brick (per 1000)**

*High-Heat Duty:* Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $135; Salina, Pa., $140; Niles, Ohio, $138; Cutler, Utah, $165.

*Super-Duty:* Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $175; Stevens Pottery, Ga., $185; Cutler, Utah, $233.

**Silica Brick (per 1000)**

*Standard:* Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $150; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $155; E. Chicago, Ind., Joliet, Rockdale, Ill., $160; Lehigh, Utah, $175; Los Angeles, $180.

*Super-Duty:* Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $160; E. Chicago, Ind., $167; Curtner, Calif., $182.

**Semisilica Brick (per 1000)**

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

**Ladle Brick (per 1000)**

*Dry Pressed:* Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

**High-Alumina Brick (per 1000)**

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $238; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $245.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $298; Clearfield, Orviston, Snow Shoe, Pa., $305; Philadelphia, $310.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $338; Clearfield, Orviston, Snow Shoe, Pa., $345; Philadelphia, $350.

**Sleeves (per 1000)**

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

**Nozzles (per 1000)**

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

**Runners (per 1000)**

Reesdale, Johnstown, Bridgeburg, Pa., $234.

**Dolomite (per net ton)**

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.

**Magnesite (per net ton)**

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

# Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons: carloads, effective $CaF_2$ content 72.5%, $37-41; 70%, $36.40; 60%, $33-36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $33-34; Mexican, all rail, duty paid, $25.25-25.75; barge, Brownsville, Tex., $27.25-27.75.

# Ores

**Lake Superior Iron Ore**

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

| | |
|---|---|
| Mesabi bessemer | $11.60 |
| Mesabi nonbessemer | 11.45 |
| Old Range bessemer | 11.85 |
| Old Range nonbessemer | 11.70 |
| Open-hearth lump | 12.70 |
| High phos. | 11.45 |

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

**Eastern Local Iron Ore**

Cents per unit, deld. E. Pa.

| | |
|---|---|
| New Jersey, foundry and basic 62-64% concentrates | 25.00-27.00 |

**Foreign Iron Ore**

Cents per unit, c.i.f. Atlantic ports

| | |
|---|---|
| Swedish basic, 65% | 25.00 |
| N. African hematite (spot)* | nom. |
| Brazilian iron ore, 68-69% | 27.00 |

**Tungsten Ore**

Net ton, unit

| | |
|---|---|
| Foreign wolframite, good commercial quality | $11.80-12.00* |
| Domestic, concentrates f.o.b. milling points | 20.00 |

*Before duty.

**Manganese Ore**

Mn 46-48%, Indian (export tax included), $135 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

**Chrome Ore**

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

| | |
|---|---|
| *Indian and Rhodesian* | |
| 48% 3:1 | $50.00 |
| 48% 2.8:1 | 48.00 |
| 48% no ratio | 39.00 |
| *South African Transvaal* | |
| 48% no ratio | $37.00 |
| 44% no ratio | 27.00 |
| *Turkish* | |
| 48% 3:1 | $55.00 |
| *Domestic* | |
| Rail nearest seller | |
| 48% 3:1 | 39.00 |

**Molybdenum**

| | |
|---|---|
| Sulfide concentrate, per lb of Mo content, mines, unpacked | $1.18 |

**Antimony Ore**

| | |
|---|---|
| Per short ton unit of Sb content, c.i.f. seaboard | |
| 55-60% | $2.50-2.60 |
| 60-65% | 2.60-2.90 |

**Vanadium Ore**

Cents per lb $V_2O_5$

| | |
|---|---|
| Domestic | 31.00 |

# Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

| | Cents |
|---|---|
| Sponge Iron, Swedish: Deld. east of Mississippi River, ocean bags 23,000 lb and over | 10.50 |
| F.o.b. Riverton or Camden, N. J., west of Mississippi River | 9.50 |
| Sponge Iron, Domestic, 98 + % Fe: Deld.east of Mississippi River, 23,000 lb and over | 10.50 |
| Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ⅜ in. x 1.3 in. | 28.00 |
| Annealed, 99.5% Fe | 36.50 |
| Unannealed (99 + % Fe) | 36.00 |
| Unannealed (99 + % Fe) (minus 325 mesh) | 59.00 |
| Powder Flakes (minus 16, plus 100 mesh) | 29.00 |
| Carbonyl Iron: 98.1-99.8%, 3 to 20 microns, depending on grade, $93.00-290.00 in standard 200-lb containers; all minus 200 mesh. | |
| Aluminum: Atomized, 500-lb drum, freight allowed Carlots | 39.50 |
| Ton lots | 41.50 |
| Antimony, 500-lb lots | 42.00* |
| Brass, 5000-lb lots | 30.30-45.70† |
| Bronze, 5000-lb lots | 45.70-49.80† |
| Copper: Electrolytic | 14.75* |
| Reduced | 14.75* |
| Lead | 7.50* |
| Manganese: Minus 35 mesh | 64.00 |
| Minus 100 mesh | 70.00 |
| Minus 200 mesh | 75.00 |
| Nickel, unannealed | 74.00 |
| Nickel-Silver, 5000-lb lots | 47.80-52.60† |
| Phosphor-Copper, 5000-lb lots | 57.80 |
| Copper (atomized) 5000-lb lots | 38.30-46.80† |
| Silicon | 47.50 |
| Solder | 7.00* |
| Stainless Steel, 304 | $1.07 |
| Stainless Steel, 316 | $1.26 |
| Tin | 14.50* |
| Zinc, 5000-lb lots | 17.50-30.70‡ |
| Tungsten: Melting grade, 99% 60 to 200 mesh, nominal; | Dollars |
| 1000 lb and over | 3.15 |
| Less than 1000 lb | 3.30 |
| Chromium, electrolytic 99.8% Cr min metallic basis | 5.00 |

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

# Electrodes

Threaded with nipple; unboxed, f.o.b. plant

**GRAPHITE**

| Inches Diam | Inches Length | Per 100 lb |
|---|---|---|
| 2 | 24 | $60.75 |
| 2½ | 30 | 39.25 |
| 3 | 40 | 37.00 |
| 4 | 40 | 35.00 |
| 5¼ | 40 | 34.75 |
| 6 | 60 | 31.50 |
| 7 | 60 | 28.25 |
| 8, 9, 10 | 60 | 28.00 |
| 12 | 72 | 26.75 |
| 14 | 60 | 26.75 |
| 16 | 72 | 25.75 |
| 17 | 60 | 26.25 |
| 18 | 72 | 26.25 |
| 20 | 72 | 25.25 |
| 24 | 84 | 26.00 |

**CARBON**

| | | |
|---|---|---|
| 8 | 60 | 13.30 |
| 10 | 60 | 13.00 |
| 12 | 60 | 12.95 |
| 14 | 60 | 12.85 |
| 14 | 72 | 11.95 |
| 17 | 60 | 11.85 |
| 17 | 72 | 11.40 |
| 20 | 84 | 11.40 |
| 20 | 90 | 11.00 |
| 24 | 72, 84 | 11.25 |
| 24 | 96 | 10.95 |
| 30 | 84 | 11.05 |
| 40, 35 | 110 | 10.70 |
| 40 | 100 | 10.70 |

# Metallurgical Coke

Price per net ton

**Beehive Ovens**

| | |
|---|---|
| Connellsville, Pa., furnace | $14.75-15.75 |
| Connellsville, Pa., foundry | 18.00-18.50 |

**Oven Foundry Coke**

| | |
|---|---|
| Birmingham, ovens | $28.85 |
| Cincinnati, deld. | 31.84 |
| Buffalo, ovens | 30.50 |
| Camden, N. J., ovens | 29.50 |
| Detroit, ovens | 30.50 |
| Pontiac, Mich., deld. | 32.45 |
| Saginaw, Mich., deld. | 34.03 |
| Erie, Pa., ovens | 30.50 |
| Everett, Mass., ovens: New England, deld. | 31.55* |
| Indianapolis, ovens | 29.75 |
| Ironton, Ohio, ovens | 29.00 |
| Cincinnati, deld. | 31.84 |
| Kearny, N. J., ovens | 29.75 |
| Milwaukee, ovens | 30.50 |
| Neville Island (Pittsburgh), Pa., ovens | 29.25 |
| Painesville, Ohio, ovens | 30.50 |
| Cleveland, deld. | 32.69 |
| Philadelphia, ovens | 29.50 |
| St. Louis, ovens | 31.50 |
| St. Paul, ovens | 29.75 |
| Chicago, deld. | 33.29 |
| Swedeland, Pa., ovens | 29.50 |
| Terre Haute, Ind., ovens | 29.75 |

*Or within $4.85 freight zone from works.

# Coal Chemicals

Spot, cents per gallon, ovens

| | |
|---|---|
| Pure benzene | 36.00 |
| Toluene, one deg | 29.50 |
| Industrial xylene | 32.00-34.00 |

Per ton, bulk, ovens

| | |
|---|---|
| Ammonium sulfate | $32.00-34.00 |

Cents per pound, producing point

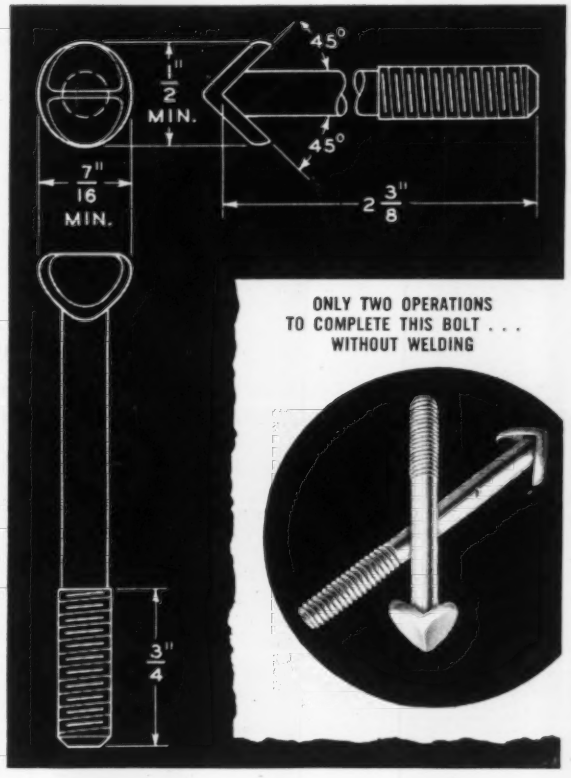
Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

# Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

| | North Atlantic | South Atlantic | Gulf Coast | West Coast |
|---|---|---|---|---|
| Deformed Bars, Intermediate, ASTM-A 305 | $5.53 | $5.33 | $5.33 | $5.73 |
| Bar Size Angles | 5.73 | 5.58 | 5.58 | 5.99 |
| Structural Angles | 5.73 | 5.58 | 5.58 | 5.99 |
| I-Beams | 5.88 | 5.72 | 5.72 | 6.02 |
| Channels | 5.88 | 5.72 | 5.72 | 6.02 |
| Plates (basic bessemer) | 6.79 | 6.62 | 6.62 | 6.94 |
| Sheets, H.R. | 8.25 | 8.20 | 8.20 | 8.50 |
| Sheets, C.R. (drawing quality) | 9.00 | 8.95 | 8.95 | 9.25 |
| Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft | 25.71 | 25.59 | 25.59 | 26.46 |
| Barbed Wire (†) | 6.65 | 6.65 | 6.65 | 7.00 |
| Merchant Bars | 6.23 | 6.07 | 6.07 | 6.43 |
| Hot-Rolled Bands | 7.20 | 7.15 | 7.15 | 7.55 |
| Wire Rods, Thomas Commercial No. 5 | 6.73 | 6.73 | 6.73 | 7.13 |
| Wire Rods, O.H. Cold Heading Quality No. 5 | 7.07 | 7.07 | 7.07 | 7.47 |
| Bright Common Wire Nails (‡) | 8.02 | 8.02 | 7.92 | 8.20 |

†Per 82 lb, net, reel. ‡Per 100-lb kegs, 20d nails and heavier.

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# by cold heading

Functionally right for its purpose, this angle iron bolt would be expensive to produce by conventional methods. But Progressive made it by cold heading — the only practical way to produce the bolt in one piece. Only two operations—heading and threading—completed the bolt. Avoids a costly welding operation too.

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SLOTTED TAPPING SCREWS AND PHILLIPS HEAD SCREWS

**THE PROGRESSIVE MFG. CO.**

Division of The Torrington Company

**76 Norwood St., Torrington, Connecticut**

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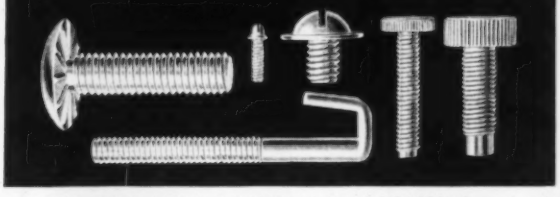

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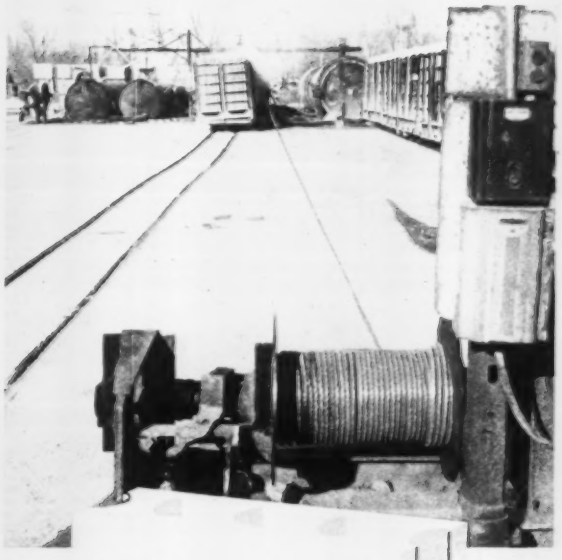

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**Yellow Strand Wire Rope**

# Ferroalloys

## MANGANESE ALLOYS

**Spiegeleisen:** Carlot, per gross ton, Palmerton, Neville Island, Pa., 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

**Standard Ferromanganese:** (Mn 74-76%, C 7% approx.) Base price per net ton; $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

**High-Grade Low-Carbon Ferromanganese:** (Mn 85-90%, C 1.5% max). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.05% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

**Medium-Carbon Ferromanganese:** (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

**Manganese Metal:** 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

**Electrolytic Manganese Metal:** Min carload, 34c; 2000 lb to min carload, 36c; 500 lb to 1999 lb, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

**Silicomanganese:** (Mn 65-68%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

## TITANIUM ALLOYS

**Ferrotitanium, Low-Carbon:** (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.35. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

**Ferrotitanium, High-Carbon:** (Ti 15-18%, C 6-8%). Contract, $200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis.

**Ferrotitanium, Medium-Carbon:** (Ti 17-21%, C 2-4.5%). Contract $225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

## CHROMIUM ALLOYS

**High-Carbon Ferrochrome:** Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

**Low-Carbon Ferrochrome:** Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

**Foundry Ferrochrome, High-Carbon:** (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

**Foundry Ferrosilicon Chrome:** (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, SM x D, 21.25c, per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

**Ferrochrome-Silicon:** Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

**Chromium Metal Electrolytic:** Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ¼" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

## VANADIUM ALLOYS

**Ferrovanadium:** Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

**Grainal:** Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

**Vanadium Oxide:** Contract less carload lot, packed, $1.38 per lb contained $V_2O_5$, freight allowed. Spot, add 5c.

## SILICON ALLOYS

**25-30% Ferrosilicon:** Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

**50% Ferrosilicon:** Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

**Low-Aluminum 50% Ferrosilicon:** (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

**65% Ferrosilicon:** Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

**75% Ferrosilicon:** Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

**90% Ferrosilicon:** Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

**Silicon Metal:** (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 22.00c per lb of Si. Packed, c.l. 23.65c, ton lot 24.95c, less ton 25.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c, for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

**Alsifer:** (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

## ZIRCONIUM ALLOYS

**12-15% Zirconium Alloy:** (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

**35-40% Zirconium Alloy:** Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

## BORON ALLOYS

**Ferroboron:** (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

**Borosil:** (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

**Bortam:** (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

**Carbortam:** (B 1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

## CALCIUM ALLOYS

**Calcium-Manganese-Silicon:** (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

**Calcium-Silicon:** (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

## BRIQUETTED ALLOYS

**Chromium Briquets:** (Weighing approx 3¾ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

**Ferromanganese Briquets:** (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

**Silicomanganese Briquets:** (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

**Silicon Briquets:** (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

**Molybdic-Oxide Briquets:** (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

## TUNGSTEN ALLOYS

**Ferrotungsten:** (70-80%), 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

## OTHER FERROALLOYS

**Ferrocolumbium:** (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots, $4.05 (nominal). Delivered.

**Ferrotantalum—Columbium:** (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lot $3.85 (nominal).

**SMZ Alloy:** (Si 60-65%, Mn 5-7%, Zr 5.7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

**Graphidox No. 5:** (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

**V-5 Foundry Alloy:** (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

**Simanal:** (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c, less than 2000 lb 21c per lb of alloy. Delivered.

**Ferrophosphorus:** (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carload, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $110 per gross ton.

**Ferromolybdenum:** (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

**Technical Molybdic-Oxide:** Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

The Perforated Metal Lay-In Acoustical Panel

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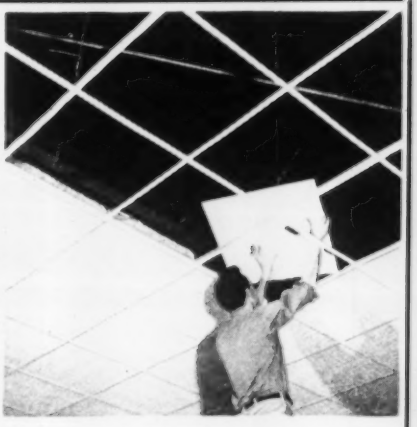
Beautified and Rigidized by a 3-Dimension Design



Licensed under Rigidized Metals Corporation Patent No. 2,443,170

TRADE MARK Registration Applied For

## *A New Concept in Acoustical Ceilings*

. . . which meets every noise-control requirement in Schools, Hospitals, Restaurants, Food Markets, Bowling Alleys, Work Rooms, Offices, etc. with unsurpassed Appearance, Economy, Efficiency, Incombustibility and Ease of Installation.

A NEW illustrated bulletin, No. 47, gives complete information regarding DIAMONTEX Acoustical Panels and their application to either new or existing buildings. Write, today, for a free copy.

## *Easily Installed and Removed Versatile and Decorative*

The distinctive 3-dimension rigidizing design creates a decorative diamond-shaped pattern on installed DIAMONTEX Panels, which varies 90-degrees in direction according to the manner in which the panels are laid in the supporting grid structure, as shown in the illustration above.

Provision is made, also, for applying DIAMONTEX Panels to existing acoustical ceilings by means of either screws or toggle bolts and a special type of molding which covers the heads of the screws or bolts after they are in place.

**DIAMOND MANUFACTURING CO. WYOMING (Wilkes-Barre Area) PA.**



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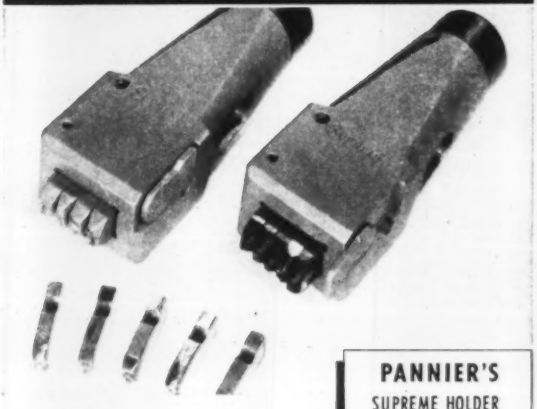

New Roto-Pin type lock is integral part of *all* Pannier Supreme Holders . . . eliminates loose, bent, dropped, or lost pins . . . flip it open to change type . . . flip it back to securely lock type in clear-marking position.

**PANNIER'S SUPREME HOLDER WITH ROTO-PIN LOCK**

Safe, fast type changing. Holder in variety of styles. Machined from High-Grade Bar Tool Steel. Hardened anvil maintains type alignment. Striking Head of Tool Steel . . . Replaceable to add long service life to Holder.

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# Sluggishness Pushes Scrap Down

**Upturn in steelmaking operations fails to stimulate mill buying. Purchases limited to small lots. STEEL's composite on the prime grade slips to $31.83, off another $1**

Scrap Prices, Page 146

**Pittsburgh** — Primary grades dropped $1 a ton on purchases by a local mill. No. 1 dealer bundles went for $32 a ton. No. 1 factory bundles $35. Fisher Body Div.'s factory bundles were sold to a Pittsburgh broker at $35.85, 75 cents less than they brought last month. It's thought brokers are competing among themselves for No. 1 factory bundles in anticipation of a purchase by a mill on the fringe of this area. About 200 tons of low phos punchings and plates were sold to a local consumer at $36.

**Philadelphia**—Some No. 1 heavy melting and turnings have been bought at the lower prices recently established. While one purchase of No. 1 was at $34, a larger tonnage was moved at $35. Short shoveling, machine shop, and heavy turnings sold $2 to $3 a ton below prices quoted a week ago. Turnings and borings have been dull, with prices nominal. No. 2 steel scrap is slow and weak.

One eastern Pennsylvania mill, after holding up shipments, is again taking deliveries.

The Pennsylvania Railroad closes May 6 on 19,145 tons, including 5000 tons of No. 1 railroad heavy melting.

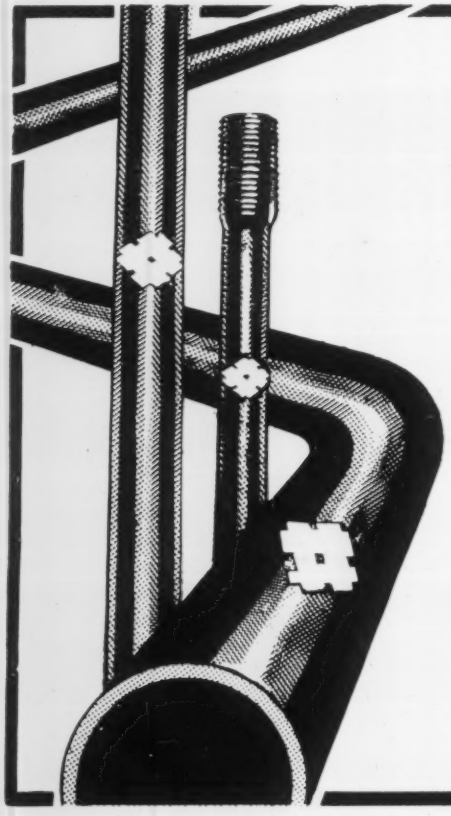
A boat loading for export has been hampered by waterfront strikes; three cargoes are affected.

**New York** — Steel scrap prices are easier with buying light—notably No. 2 heavy melting and bundles. Brokers are paying $29-$30 for No. 1 heavy melting, shipping point, for domestic shipment, but little tonnage is moving. Short shoveling turnings are slow, and with other turnings grades are off $1 a ton. Unstripped motor blocks are off $2.

**Boston**—No. 1 cupola and machinery cast are off $1 a ton, shipping point, and No. 1 heavy melting is down a like amount, brokers paying $23-$24. All grades for domestic shipment are slow, notably No. 2 bundles and turnings. Prices on turnings are nominal at the lowest point in recent years.

**Chicago**—Lack of sales keeps this market from establishing firm prices. Further softening is indicated. Railroad grades are generally being quoted $1 to $2 a ton lower than those of recent sales. Last midweek, brokers were awaiting a major mill's entry into the market to establish firm price levels.

**Cleveland**—Only 13,000 tons of industrial bundles were offered in the auto lists from four district plants. They were taken by several bidders at prices $2 to $3 below those of a month ago. Brokers considered $31 to $32 a representative price.

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STEELMAKING SCRAP PRICE COMPOSITE
Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.
1957
1958
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
Apr. 30 1958 $31.83
Week Ago $32.83
Month Ago $34.33
Year Ago $43.67
Mar. Avg. $35.83

Over-all, the market is holding, but with buying lacking, quoted prices are nominal. About the most promising thing in the market: A bottom probably has been reached—at least temporarily.

**Youngstown** — Scrap remains in the doldrums. Consumers aren't buying important tonnages. Considerable material is being collected from farms and homes and is moving into scrapyards.

**Detroit**—Local auto lists closed last week $3 to $4 down from prices a month ago. Brokers and dealers think the small tonnage—34 cars less than in the March lists—kept prices from sinking even lower. No open orders have been reported, and there were only two buyers for the listed carloads.

One buyer will be able to save a bit on a closed order for Canada which calls for bundles at a higher price than the last list closings.

Brokers' buying prices are holding at unchanged levels, and the trade expects the market will continue fairly steady for several weeks.

**Buffalo** — Cast iron scrap developed new weakness here last week. Cupola and No. 1 machinery cast were marked down $2 a ton. There also was another cut of $1 on machine shop turnings.

Dealers await placement of May mill business to clarify the price situation on the principal steel grades. This market, though, has pretty much discounted the lower prices which the mills are likely to offer on tonnage if they do enter the market this month.

The mills have plenty of scrap on hand, and because of low operations, they are not eager to buy more than token tonnages. Blast furnace material continues sluggish.

**Cincinnati**—Scrap is marking time here. Some traders think prices will go off another $1 a ton when the mills enter the market for May tonnage. Brokers say early industrial lists point in that direction. Currently prices are holding.

**St. Louis**—Scrap is moving slowly here. Not much material is coming to the market, and demand is poor. There is plenty in inventory. Little tonnage is being shipped out of the area.

Slight price drops are reported on clean auto cast and stove plates; both grades are off $1 a ton.

**Birmingham**—Although there is a little activity in the cast iron grades, the over-all movement of scrap is limited, and the market appears weak. One large consumer of open-hearth material has advised brokers it will receive limited shipments on outstanding orders. Exports are dull.

**Houston**—Support for the scrap market is lacking here. Only one area mill has indicated it will do any buying during May, and that likely will be limited to crushed short shoveling turnings and specialty items. Cast iron scrap is also in poor demand.

The export market remains quiet. Mexican demand probably will not extend across the border this month.

**San Francisco**—Steel scrap prices are steady here, but the market undertone continues weak. If any change develops, it is likely to be on the downside, in the opinion of local scrap interests.

**Los Angeles**—Despite the absence of significant buying, scrap prices moved up an average of $2 a ton last week, dealers describing the action as an adjustment. No. 1 heavy melting rose to $34 and No. 2 heavy melting to $32. Other specifications advanced similarly.

**Seattle**—Scrap prices are expected to decline another $3 a ton this week, lowering quotations on No. 1 heavy melting to $27, on No. 2 to $26, and No. 1 bundles to $21. Little material is coming into dealers' yards. Export interest is lagging.

## Iron Ore . . .

Iron Ore Prices, Page 140

The iron ore shipping season on the Great Lakes is opening up slowly. Indications are it will be mid-May before a representative number of carriers is in service.

Last week, one of the larger vessel operators established rates (same as last year's) for the transportation of iron ore. They are:

Iron Ore—$2 a gross ton from the head of Lake Superior to lower lake ports; $1.80, Marquette to lower lake ports; $1.50, from Escanaba to Lake Erie ports; $1.20, Escanaba to Chicago District ports.

## Semifinished Steel . . .

Semifinished Prices, Page 134

The national steel ingot rate rose 1 point to 48 per cent of capacity last week, reversing its trend of the past several weeks.

While the news is encouraging, it's too early to tell whether the long predicted turn is here. Most observers prefer to "wait and see" since operations at producing points still show a mixed trend.

U. S. Steel Corp.'s Columbia-Geneva Steel Div. will close down its Torrance, Calif., rolling mill in late June for a two-week vacation period. At the same time, open hearth furnaces at Torrance will be down for three weeks.

Lone Star Steel Co. closed down the open hearth department at its East Texas plant May 1. President E. B. Germany says sales and revenues have been severely curtailed by depressed conditions in the oil and gas industries.

*(Please turn to Page 151)*

# Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Apr. 30, 1958. *Changes shown in italics.*

## STEELMAKING SCRAP COMPOSITE

| | |
|---|---|
| Apr. 30 | $31.83 |
| Apr. 23 | 32.83 |
| Mar. Avg. | 35.83 |
| Apr. 1957 | 43.57 |
| Apr. 1953 | 42.88 |

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

### PITTSBURGH

| | |
|---|---|
| *No. 1 heavy melting* | *31.00-32.00* |
| No. 2 heavy melting | 28.00-29.00 |
| *No. 1 dealer bundles* | *31.00-32.00* |
| *No. 2 bundles* | *24.00-25.00* |
| No. 1 busheling | 32.00-33.00 |
| No. 1 factory bundles | 34.00-35.00 |
| Machine shop turnings | 13.00-14.00 |
| Mixed borings, turnings | 13.00-14.00 |
| Short shovel turnings | 17.00-18.00 |
| Cast iron borings | 17.00-18.00 |
| *Cut structurals:* | |
| *2 ft and under* | *37.00-38.00* |
| *3 ft lengths* | *35.00-36.00* |
| Heavy turnings | 28.00-29.00 |
| *Punchings & plate scrap* | *35.00-36.00* |
| *Electric furnace bundles* | *37.00-38.00* |

Cast Iron Grades

| | |
|---|---|
| *No. 1 cupola* | *40.00-41.00* |
| *Stove plate* | *40.00-41.00* |
| Unstripped motor blocks | 23.00-24.00 |
| *Clean auto cast* | *40.00-41.00* |
| *Drop broken machinery* | *48.00-49.00* |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 35.00-36.00 |
| Rails, 2 ft and under | 53.00-54.00 |
| Rails, 18 in. and under | 54.00-55.00 |
| Random rails | 50.00-51.00 |
| Railroad specialties | 44.00-45.00 |
| Angles, splice bars | 47.00-48.00 |

Stainless Steel Scrap

| | |
|---|---|
| 18-8 bundles & solids | 170.00-175.00 |
| 18-8 turnings | 100.00-105.00 |
| 430 bundles & solids | 110.00-115.00 |
| 430 turnings | 50.00-52.00 |

### CHICAGO

| | |
|---|---|
| *No. 1 hvy melt., indus.* | *31.00-32.00* |
| *No. 1 hvy melt., dealer* | *27.00-28.00* |
| No. 2 heavy melting | 26.00-27.00 |
| *No. 1 factory bundles* | *33.00-34.00* |
| *No. 1 dealer bundles* | *28.00-29.00* |
| No. 2 bundles | 21.00-22.00 |
| *No. 1 busheling, indus.* | *29.00-31.00* |
| *No. 1 busheling, dealer* | *27.00-28.00* |
| *Machine shop turnings* | *13.00-14.00* |
| *Mixed borings, turnings* | *15.00-16.00* |
| *Short shovel turnings* | *15.00-16.00* |
| *Cast iron borings* | *15.00-16.00* |
| Cut structurals, 3 ft | 35.00-36.00 |
| Punchings & plate scrap | 37.00-38.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 38.00-39.00 |
| Stove plate | 35.00-36.00 |
| Unstripped motor blocks | 30.00-31.00 |
| Clean auto cast | 43.00-44.00 |
| Drop broken machinery | 43.00-44.00 |

Railroad Scrap

| | |
|---|---|
| *No. 1 R.R. heavy melt.* | *33.00-34.00* |
| *R.R. malleable* | *46.00-47.00* |
| *Rails, 2 ft and under* | *46.00-47.00* |
| *Rails, 18 in. and under* | *47.00-48.00* |
| *Angles, splice bars* | *44.00-45.00* |
| *Axles* | *50.00-51.00* |
| *Rails, rerolling* | *48.00-49.00* |

Stainless Steel Scrap

| | |
|---|---|
| 18-8 bundles & solids | 160.00-165.00 |
| 18-8 turnings | 85.00-95.00 |
| 430 bundles & solids | 85.00-95.00 |
| 430 turnings | 45.00-50.00 |

### YOUNGSTOWN

| | |
|---|---|
| No. 1 heavy melting | 32.00-33.00 |
| No. 2 heavy melting | 22.00-23.00 |
| No. 1 busheling | 32.00-33.00 |
| No. 1 bundles | 29.00-30.00 |
| No. 2 bundles | 21.00-22.00 |
| Machine shop turnings | 9.00-10.00 |
| Short shovel turnings | 13.00-14.00 |
| Cast iron borings | 13.00-14.00 |
| Low phos. | 34.00-35.00 |
| Electric furnace bundles | 33.00-34.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 35.00-36.00 |

### CLEVELAND

| | |
|---|---|
| No. 1 heavy melting | 29.00-30.00 |
| No. 2 heavy melting | 19.00-20.00 |
| No. 1 factory bundles | 31.00-32.00 |
| No. 1 bundles | 29.00-30.00 |
| No. 2 bundles | 20.00-21.00 |
| No. 1 busheling | 29.00-30.00 |
| Machine shop turnings | 7.00-8.00 |
| Short shovel turnings | 11.00-12.00 |
| Mixed borings, turnings | 11.00-12.00 |
| Cast iron borings | 11.00-12.00 |
| Cut foundry steel | 34.00-35.00 |
| Cut structurals, plates 2 ft and under | 35.00-36.00 |
| Low phos, punchings & plate | 30.00-31.00 |
| Alloy free, short shovel turnings | 16.00-17.00 |
| Electric furnace bundles | 30.00-31.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 42.00-43.00 |
| Charging box cast | 33.00-34.00 |
| Heavy breakable cast | 33.00-34.00 |
| Stove plate | 42.00-43.00 |
| Unstripped motor blocks | 25.00-26.00 |
| Brake shoes | 33.00-34.00 |
| Clean auto cast | 42.00-43.00 |
| Burnt cast | 30.00-31.00 |
| Drop broken machinery | 47.00-48.00 |

Railroad Scrap

| | |
|---|---|
| R.R. malleable | 60.00-61.00 |
| Rails, 2 ft and under | 56.00-57.00 |
| Rails, 18 in. and under | 57.00-58.00 |
| Rails, random lengths | 49.00-50.00 |
| Cast steel | 44.00-45.00 |
| Railroad specialties | 47.00-48.00 |
| Uncut tires | 40.00-41.00 |
| Angles, splice bars | 46.00-47.00 |
| Rails, rerolling | 51.00-52.00 |

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

| | |
|---|---|
| 18-8 bundles, solids | 160.00-165.00 |
| 18-8 turnings | 90.00-95.00 |
| 430 clips, bundles, solids | 75.00-80.00 |
| 430 turnings | 40.00-50.00 |

### ST. LOUIS

(Brokers' buying prices)

| | |
|---|---|
| No. 1 heavy melting | 32.00 |
| No. 2 heavy melting | 30.00 |
| No. 1 bundles | 32.00 |
| No. 2 bundles | 23.00 |
| No. 1 busheling | 32.00 |
| Machine shop turnings | 16.00 |
| Short shovel turnings | 18.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 40.00 |
| Charging box cast | 33.00 |
| Heavy breakable cast | 33.00 |
| Unstripped motor blocks | 34.00 |
| *Clean auto cast* | *44.00* |
| *Stove plate* | *37.00* |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt | 35.00 |
| Rails, 18 in. and under | 50.00 |
| Rails, random lengths | 44.00 |
| Rails, rerolling | 53.00 |
| Angles, splice bars | 45.00 |

### BIRMINGHAM

| | |
|---|---|
| No. 1 heavy melting | 30.00-31.00 |
| No. 2 heavy melting | 25.00-26.00 |
| No. 1 bundles | 30.00-31.00 |
| *No. 2 bundles* | *18.00-19.00* |
| No. 1 busheling | 30.00-31.00 |
| Cast iron borings | 12.00-13.00 |
| Machine shop turnings | 22.00-23.00 |
| Short shovel turnings | 23.00-24.00 |
| *Bar crops and plates* | *37.00-38.00* |
| *Structurals & plates* | *36.00-37.00* |
| Electric furnace bundles | 35.00-36.00 |
| Electric furnace: | |
| 2 ft and under | 34.00-35.00 |
| 3 ft and under | 33.00-34.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 48.00-49.00 |
| Stove plate | 48.00-49.00 |
| Unstripped motor blocks | 37.00-38.00 |
| Charging box cast | 22.00-23.00 |
| *No. 1 wheels* | *34.00-35.00* |

Railroad Scrap

| | |
|---|---|
| *No. 1 R.R. heavy melt.* | *31.00-32.00* |
| Rails, 18 in. and under | 47.00-48.00 |
| *Rails, rerolling* | *45.00-46.00* |
| Rails, random lengths | 41.00-42.00 |
| *Angles, splice bars* | *37.00-38.00* |

### PHILADELPHIA

| | |
|---|---|
| *No. 1 heavy melting* | *34.00-35.00* |
| *No. 2 heavy melting* | *31.00* |
| *No. 1 bundles* | *34.00-35.00* |
| *No. 2 bundles* | *24.00* |
| *No. 1 busheling* | *34.00-35.00* |
| Electric furnace bundles | 36.00 |
| *Mixed borings, turnings* | *16.00* |
| *Short shovel turnings* | *18.00* |
| *Machine shop turnings* | *15.00* |
| *Heavy turnings* | *29.00* |
| *Structural & plate* | *39.00-40.00* |
| *Couplers, springs, wheels* | *43.50* |
| Rail crops, 2 ft. & under | 56.00-58.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 39.00 |
| Heavy breakable cast | 42.00 |
| *Malleable* | *58.00-59.00* |
| *Drop broken machinery* | *47.00-48.00* |

### NEW YORK

(Brokers' buying prices)

| | |
|---|---|
| *No. 1 heavy melting* | *29.00-30.00* |
| *No. 2 heavy melting* | *25.00-26.00* |
| *No. 1 bundles* | *29.00-30.00* |
| *No. 2 bundles* | *16.00-17.00* |
| Machine shop turnings | 8.00-9.00 |
| *Mixed borings, turnings* | *9.00-10.00* |
| *Short shovel turnings* | *11.00-12.00* |
| *Long phos (structurals & plates)* | *32.00-33.00* |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 35.00-36.00 |
| *Unstripped motor blocks* | *24.00-25.00* |
| Heavy breakable | 33.00-34.00 |

Stainless Steel

| | |
|---|---|
| *18-8 sheets, clips, solids* | *135.00-140.00* |
| *18-8 borings, turnings* | *45.00-50.00* |
| 410 sheets, clips, solids | 50.00-55.00 |
| *430 sheets, clips, solids* | *65.00-70.00* |

### BUFFALO

| | |
|---|---|
| No. 1 heavy melting | 26.00-27.00 |
| No. 2 heavy melting | 24.00-25.00 |
| No. 1 bundles | 26.00-27.00 |
| No. 2 bundles | 22.00-23.00 |
| No. 1 busheling | 26.00-27.00 |
| Mixed borings, turnings | 13.00-14.00 |
| *Machine shop turnings* | *10.00-11.00* |
| Short shovel turnings | 14.00-15.00 |
| Cast iron borings | 13.00-14.00 |
| Low phos. structurals and plate, 5 ft and under | 31.00-32.00 |
| 2 ft and under | 35.00-36.00 |

Cast Iron Grades

(F.o.b. shipping point)

| | |
|---|---|
| *No. 1 cupola* | *39.00-40.00* |
| *No. 1 machinery* | *43.00-44.00* |

Railroad Scrap

| | |
|---|---|
| Rails, random lengths | 45.00-46.00 |
| Rails, 3 ft and under | 51.00-52.00 |
| Railroad specialties | 35.00-36.00 |

### CINCINNATI

(Brokers' buying prices, f.o.b. shipping point)

| | |
|---|---|
| No. 1 heavy melting | 28.50-29.50 |
| No. 2 heavy melting | 25.50-26.50 |
| No. 1 bundles | 28.50-29.50 |
| No. 2 bundles | 19.00-20.00 |
| No. 1 busheling | 28.50-29.50 |
| Machine shop turnings | 12.00-13.00 |
| Mixed borings, turnings | 11.00-12.00 |
| Short shovel turnings | 14.00-15.00 |
| Cast iron borings | 11.00-12.00 |
| Low phos. 18 in. | 36.00-37.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 38.00-39.00 |
| Heavy breakable cast | 32.00-33.00 |
| Charging box cast | 32.00-33.00 |
| Drop broken machinery | 45.00-46.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 33.00-34.00 |
| Rails, 18 in. and under | 52.00-53.00 |
| Rails, random lengths | 43.00-44.00 |

### HOUSTON

(Brokers' buying prices; f.o.b. cars)

| | |
|---|---|
| No. 1 heavy melting | 32.00† |
| No. 2 heavy melting | 30.00† |
| No. 2 bundles | 22.00† |
| Machine shop turnings | 15.00† |
| Crushed turnings | 19.00† |
| Low phos. plates, structurals | 36.00† |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 38.00† |
| Heavy breakable | 30.00† |
| Unstripped motor blocks | 33.50 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt | 34.00† |

### BOSTON

(Brokers' buying prices; f.o.b. shipping point)

| | |
|---|---|
| *No. 1 heavy melting* | *23.00-24.00* |
| No. 2 heavy melting | 19.00-20.00 |
| *No. 1 bundles* | *23.00-24.00* |
| No. 2 bundles | 14.00-15.00 |
| *No. 1 busheling* | *23.00-24.00* |
| *Machine shop turnings* | *5.00-6.00†* |
| *Mixed borings, turnings* | *5.00-6.00†* |
| *Short shovel turnings* | *6.00-7.00†* |
| *No. 1 cast* | *28.00-29.00* |
| Mixed cupola cast | 28.00-29.00 |
| *No. 1 machinery cast* | *32.00-33.00* |

### DETROIT

(Brokers' buying prices; f.o.b. shipping point)

| | |
|---|---|
| No. 1 heavy melting | 20.00-21.00 |
| No. 2 heavy melting | 16.00-17.00 |
| No. 1 bundles | 21.00-22.00 |
| No. 2 bundles | 12.00-13.00 |
| No. 1 busheling | 20.00-21.00 |
| Machine shop turnings | 5.00-6.00 |
| Mixed borings, turnings | 6.00-7.00 |
| Short shovel turnings | 7.00-8.00 |
| Punchings & plate | 25.00-26.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 27.00-28.00 |
| Stove plate | 22.00-23.00 |
| Charging box cast | 21.00-22.00 |
| Heavy breakable | 20.00-21.00 |
| Unstripped motor blocks | 11.00-12.00 |
| Clean auto cast | 28.00-29.00 |

### SEATTLE

| | |
|---|---|
| *No. 1 heavy melting* | *27.00†* |
| *No. 2 heavy melting* | *25.00†* |
| *No. 1 bundles* | *21.00†* |
| *No. 2 bundles* | *20.00†* |
| Machine shop turnings | 16.00 |
| Mixed borings, turnings | 16.00 |
| Electric furnace No. 1 | 38.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 31.00 |
| Heavy breakable cast | 28.00 |
| Unstripped motor blocks | 23.00 |
| Stove plate (f.o.b. plant) | 21.00 |

### LOS ANGELES

| | |
|---|---|
| *No. 1 heavy melting* | *34.00* |
| *No. 2 heavy melting* | *32.00* |
| *No. 1 bundles* | *30.00* |
| *No. 2 bundles* | *22.00* |
| Machine shop turnings | 9.00 |
| Shoveling turnings | 11.00 |
| *Cast iron borings* | *11.00* |
| *Cut structurals and plate 1 ft and under* | *48.00* |

Cast Iron Grades

(F.o.b. shipping point)

| | |
|---|---|
| *No. 1 cupola* | *41.00* |

Railroad Scrap

| | |
|---|---|
| *No. 1 R.R. heavy melt.* | *34.00* |

### SAN FRANCISCO

| | |
|---|---|
| No. 1 heavy melting | 32.00 |
| No. 2 heavy melting | 30.00 |
| No. 1 bundles | 30.00 |
| No. 2 bundles | 22.00 |
| Machine shop turnings | 15.00 |
| Mixed borings, turnings | 15.00 |
| Cast iron borings | 15.00 |
| Heavy turnings | 15.00 |
| Short shovel turnings | 15.00 |
| Cut structurals, 3 ft. | 40.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 42.00 |
| Charging box cast | 34.00 |
| Stove plate | 34.00 |
| Heavy breakable cast | 28.00 |
| Unstripped motor blocks | 31.00 |
| Clean auto cast | 40.00 |
| Drop broken machinery | 40.00 |
| No. 1 wheels | 34.00 |

### HAMILTON, ONT.

| | |
|---|---|
| No. 1 heavy melting | 30.00 |
| No. 2 heavy melting | 26.00 |
| No. 1 bundles | 30.00 |
| No. 2 bundles | 23.00 |
| Mixed steel scrap | 25.00 |
| Mixed borings, turnings | 15.00 |
| Busheling, new factory: | |
| Prepared | 30.00 |
| Unprepared | 24.00 |
| Short steel turnings | 19.00 |

Cast Iron Grades‡

| | |
|---|---|
| No. 1 machinery cast | 45.00-50.00 |

†Nominal.
‡F.o.b. Hamilton, Ont.

# DOES specialized BUSINESS PUBLICATION ADVERTISING HELP SALESMEN?

**No one is in a better position to give a hard-boiled, practical answer to this question than the men who spend their working lives on the sales front... the men the ads are supposed to help... the men who sell.**

**Here is the statement of a salesman who knows what advertising does for him when it appears in the industrial, trade or professional publications that serve the specialized markets to which he sells:**

says Mr. Hegarty:

Jack Hegarty
Texas Instruments Incorporated
**sells to industry**

"I sell semiconductors and other components to original equipment manufacturers in the electronics field. With the tremendous expansion in the electronic industry today, one of our problems is prompt coverage of the market when a new or improved device is announced. I can contact all my larger accounts within a few days, but it takes considerable time to cover the many smaller accounts.

"That's one of the reasons I think our advertising in business publications is so important. It covers all my prospects, large and small, and gets the story of our products to all three groups that can influence purchases—the engineers, the purchasing agents and top management. In some accounts 50 or 60 engineers will attend a meeting. However, there are still many decision-making personnel who can't attend because of other demands on their time. But I know that they will get our story from our advertising.

"On cold calls, many times my selling effort is greatly assisted by the 'pre-selling' of our advertising and it seems to me that advertising often gets me an entree at a higher level than I can usually get on cold calls.

"It helps in other ways, too. For instance, we get inquiries for applications and devices that haven't been developed by our company. Prospects read the advertising, get clues, then contact us. In one case we ran an ad that basically showed a specification sheet on a new component. On one inquiry I followed up, the engineer had the magazine open on his desk right at our ad. He asked me, 'Can you meet this spec?' It was different—but, by some specialized design work, something we could do. I secured a first release order for over $70,000 just from this one inquiry.

"While my division of our corporation had first established its name in the industry on the basis of its work in semiconductors, we also manufacture many other components. They are in competition with units of companies longer established than we are. Here our advertising helps establish our name as a progressive company with a dependable reputation, good to deal with."

**Ask your own salesmen** what your company's business publication advertising does for them. If their answers are generally favorable, you can be sure that it is really helping them sell. If too many answers are negative, it could well pay you to review your advertising objectives — and to make sure the publications that carry your advertising are read by the men who must be sold.

**How salesmen use their companies' advertising to get more business**

Here's a useful package of ideas for the sales manager, advertising manager or agency man who would like to get more horsepower out of his advertising. Send for a free copy of the pocket size booklet which reports the successful methods employed by eleven salesmen who tell how they get more value out of their companies' business publication advertising.

You can be sure that more of your salesmen will use your advertising after they read how others get business through these simple methods.

The coupon is for your convenience in sending for your free copy.

**NATIONAL BUSINESS PUBLICATIONS, INC.**

NBP

**...each of which serves a specialized market in a specific industry, trade or profession.**

NATIONAL BUSINESS PUBLICATIONS, INC.
Department 12D
1413 K Street, N. W.
Washington 5, D. C. STerling 3-7533

Please send me a free copy of the NBP booklet "How Salesmen Use Business Publication Advertising in Their Selling."

Name _____

Title _____

Company _____

Street Address _____

City _____ Zone _____ State _____

# First Quarter Profits Off

**Lack of demand and lower prices combine to put earnings below what they were last year. Copper raised 0.25 cent a pound by custom smelters**

Nonferrous Metal Prices, Pages 150 & 151

NET profits of nonferrous companies in the first quarter were sharply below what they were in the same period of 1957.

**Why**—Two major reasons for the slump: 1. A falloff in sales due to the recession. 2. A drop in prices brought about by less demand and too much production. For example: At the end of 1957's first quarter, primary copper was quoted at 32 cents a pound, zinc at 13.5 cents, and lead at 16 cents. Prices now are 25 cents, 10 cents, and 13 cents. Complicating the profit picture is the fact that costs have been steadily rising.

**Examples** — Here's how profits shaped up in the first quarter for ten companies:

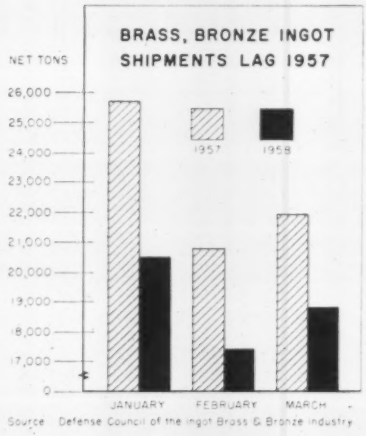
American Smelting & Refining Co. reported first quarter estimated earnings of $4 million, compared with $8,249,000 in the same period last year; Calumet & Hecla Inc., $396,001, compared with $635,711; Copper Range Co., $883,031, compared with $1,073,296; National Lead Co., $8,952,326, compared with $14,772,815; American Zinc, Lead & Smelting Co., $183,213, compared with $585,665.

Kennecott Copper Corp., $11,651,594, compared with $27,785,579; Aluminum Co. of America, $11,458,810, compared with $18,594,086; Aluminium Ltd., $5.3 million (estimated), compared with $15 million; Kaiser Aluminum & Chemical Corp., $6,419,000, compared with $8,267,000.

One of the few firms to show a gain was Reynolds Metals Co. which reported first quarter profits of $9,910,345, compared with $9,880,571 last year.

## More Nickel Cutbacks

International Nickel Co. of Canada Ltd. began trimming Canadian nickel output by 10 per cent (around 1000 tons a month) this week. It is the second such move by the company this year. In March, production was cut 10 per cent, or 1250 tons a month. This puts Inco's production at an annual rate of about 125,000 tons.




Source: Defense Council of the Ingot Brass & Bronze Industry

Last year the company produced at the rate of 147,500 tons.

Stocks in the hands of Inco and the U. S. government stand at over 52,500 tons (excluding stockpile). Inco says even at the new production rate these stocks will probably continue to climb.

Reason: Free World consumption in the first quarter was at an estimated yearly rate of 177,500 tons. But even with Inco's cutbacks, Free World production rate should be around 225,000 tons.

## Custom Smelters Up

A continuing level of good business has encouraged custom smelters to boost their copper price 0.25 cent a pound to 23.75 cents. Observers say this increased demand is mainly at the expense of primary producers (who are quoting 25 cents) rather than signifying a revival of customer interest. Look for the quotation to be boosted if demand holds at present levels.

## Alcoa To Buy Scrap

Aluminum Co. of America has announced two projects designed to boost its sales: 1. A program to purchase self-generated borings and turnings from users of Alcoa screw machine stock. Alcoa will buy scrap in amounts not to exceed 60 per cent of the customer purchases from Alcoa, its distributors, or jobbers. For segregated, clean, and dry quantities of 20,000 lb or more, the price will be 16.5 cents a pound. For quantities less than 20,000 lb, the price will be 15.5 cents a pound. Agents are now being selected to operate in major screw machine stock buying centers.

2. Purchase of the Transformer Div. of Automation Industries Inc. for the study of applications of foil and sheet strip windings for transformers and miscellaneous electrical uses. Alcoa says one indication of the potential market here is that coil windings annually consume 232,500 tons of copper magnet wire.

### NONFERROUS PRICE RECORD

| | Price Apr. 30 | Last Change | Previous Price | Mar. Avg | Feb. Avg | Apr., 1957 Avg |
|---|---|---|---|---|---|---|
| Aluminum | 24.00 | Apr. 1, 1958 | 26.00 | 26.000 | 26.000 | 25.000 |
| Copper | 23.75–25.00 | Apr. 24, 1958 | 23.50–25.00 | 24.163 | 24.298 | 31.598 |
| Lead | 11.80 | Apr. 1, 1958 | 12.80 | 12.800 | 12.800 | 15.800 |
| Magnesium | 35.25 | Aug. 13, 1956 | 33.75 | 35.250 | 35.250 | 35.250 |
| Nickel | 74.00 | Dec. 6, 1956 | 64.50 | 74.000 | 74.000 | 74.000 |
| Tin | 93.75 | Apr. 30, 1958 | 94.25 | 93.425 | 93.818 | 99.276 |
| Zinc | 10.00 | July 1, 1957 | 10.50 | 10.000 | 10.000 | 13.500 |

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

## Include Price in the Many Advantages Solid Brass Has Over Other Materials

Many concerns are discovering that the availability of solid brass—at competitive prices—makes it extremely advantageous to use in place of other materials.

For example, parts of the desk lamp shown here made by J. Schrader Co., Cleveland, Ohio, are now being made of Bridgeport F-37 Ultra Fine Grain Brass Strip. Formerly, these same parts were made from a plated product. Now, with solid brass as an active cost competitor, its inherent qualities of workability, beauty and durability over other metals and methods are employed with excellent results.

This is an opportunity that warrants your attention. Your Bridgeport salesman will be glad to show you how solid brass can benefit your product. You'll find that he will work with you in every way. Look into the benefits of solid brass . . . *including its cost.*

*matched*
Bridgeport Brass Alloys
*to your job*

**BRIDGEPORT BRASS**

Offices in Principal Cities • Conveniently Located Warehouses

Bridgeport Brass Company, Bridgeport 2, Connecticut
In Canada: Noranda Copper and Brass Ltd., Montreal

# Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

## PRIMARY METALS AND ALLOYS

**Aluminum:** 99.5%, pigs, 24.00; ingots, 26.10. 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

**Aluminum Alloy:** No. 13, 27.90; No. 43, 27.70; No. 195, 28.70; No. 214, 29.50; No. 356, 27.90. 30-lb ingots.

**Antimony:** R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

**Beryllium:** 97% lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

**Beryllium Aluminum:** 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

**Beryllium Copper:** 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

**Bismuth:** $2.25 per ton, ton lots.

**Cadmium:** Sticks and bars, $1.55 per lb deld.

**Cobalt:** 97-99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

**Columbium:** Powder, $55-90 per lb, nom.

**Copper:** Electrolytic, 25.00 deld.; custom smelters, 23.75; lake, 25.00 deld.; fire refined, 24.75 deld.

**Germanium:** First reduction, $179.17-197.31 per lb; intristic grade, $197.31-220 per lb, depending on quantity.

**Gold:** U. S. Treasury, $35 per oz.

**Indium:** 99.9%, $2.25 per troy oz.

**Iridium:** $70-90 nom. per troy oz.

**Lead:** Common, 11.80; chemical, 11.90; corroding, 11.90, St. Louis, New York basis, add 0.20.

**Lithium:** 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire $15, f.o.b. Minneapolis.

**Magnesium:** Pig, 35.25; ingot, 36.60 f.o.b. Velasco, Tex.; 12 in. thick, 59.00 f.o.b. Madison, Ill.

**Magnesium Alloys:** AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

**Mercury:** Open market, spot, New York, $230-233 per 76-lb flask.

**Molybdenum:** Unalloyed, turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

**Nickel:** Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 779.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty, New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.ob. Copper Cliff, Ont.

**Osmium:** $70-100 per troy oz nom.

**Palladium:** $19-21 per troy oz.

**Platinum:** $65-75 per troy oz from refineries.

**Radium:** $16-21.50 per mg radium content, depending on quantity.

**Rhodium:** $118-125 per troy oz.

**Ruthenium:** $45-55 per troy oz.

**Selenium:** $7.00 per lb, commercial grade.

**Silver:** Open market, 88.625 per troy oz.

**Sodium:** 16.50, c.l.; 17.00 l.c.l.

**Tantalum:** Rod, $60 per lb; sheet, $55 per lb.

**Tellurium:** $1.65-1.85 per lb.

**Thallium:** $7.50 per lb.

**Tin:** Straits, N. Y., spot and prompt, 93.75.

**Titanium:** Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.), $2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

**Tungsten:** Powder, 98.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, $3.85.

**Zinc:** Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb, New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 13.75; No. 2, 14.75; No. 5, 14.25 deld.

**Zirconium:** Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

## SECONDARY METALS AND ALLOYS

**Aluminum Ingot:** Piston alloys, 24.00-24.50. No. 12 foundry alloy (No. 2 grade), 21.25-21.50; 5% silicon alloy, 0.60 Cu max., 24.00-24.25; 13 alloy, 0.60 Cu max., 24.00-24.25; 195 alloy, 24.25-25.50; 108 alloy, 21.75. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.25; grade 2, 21.25; grade 3, 20.00; grade 4, 18.00.

**Brass Ingot:** Red brass, No. 115, 25.25; tin bronze, No. 225, 34.00, No. 245, 28.75; high-leaded tin bronze, No. 305, 29.25, No. 1 yellow, No. 405, 20.75; manganese bronze, No. 421, 23.00.

**Magnesium Alloy Ingot:** AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

## NONFERROUS PRODUCTS

### BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.80 f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.78, f.o.b. Temple, Pa.

### COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 30.355; l.c.l., 30.98. Weatherproof, 30,000-lb lots, 32.53; l.c.l., 33.28. Magnet wire deld., 38.43, before quantity discounts.

### LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $17.50 per cwt; pipe, full coils, $17.50 per cwt; traps and bends, list prices plus 30%.

### TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

### ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, $24.00; plate, $12.50-19.20; H.R. strip, $12.50-22.90; $11.00-17.40.

### ZIRCONIUM

C.R. strip, $15.90-31.25; forged or H.R. bars, ribbon zinc in coils, 20.50; plates, 19.00.

### NICKEL, MONEL, INCONEL

| | "A" Nickel | Monel | Inconel |
|---|---|---|---|
| Sheets, C.R. | 126 | 106 | 128 |
| Strips, C.R. | 124 | 108 | 138 |
| Plate, H.R. | 120 | 105 | 121 |
| Rod, Shapes, H.R. | 107 | 89 | 109 |
| Seamless Tubes | 157 | 129 | 200 |

### ALUMINUM

**Sheets:** 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

| Thickness Range, Inches | Flat Sheet | Coiled Sheet |
|---|---|---|
| 0.249-0.136 | 41.10-45.60 | ..... |
| 0.135-0.096 | 41.60-46.70 | ..... |
| 0.125-0.096 | ..... | 38.50-39.10 |
| 0.095-0.077 | 42.30-48.50 | 38.60-39.30 |
| 0.076-0.061 | 42.90-50.80 | 38.80-40.00 |
| 0.060-0.048 | 43.60-53.10 | 39.40-41.10 |
| 0.047-0.038 | 44.20-55.90 | 39.90-32.50 |
| 0.037-0.030 | 44.60-60.90 | 40.30-44.30 |
| 0.029-0.024 | 45.20-52.70 | 40.60-45.00 |
| 0.023-0.019 | 46.20-56.10 | 41.70-43.40 |
| 0.018-0.017 | 47.00-53.40 | 42.30-44.00 |
| 0.016-0.015 | 47.90-54.30 | 43.10-44.80 |
| 0.014 | 48.90 | 44.10-45.80 |
| 0.013-0.012 | 50.10 | 44.80 |
| 0.011 | 51.10 | 46.00 |
| 0.010-0.0095 | 52.60 | 47.40 |
| 0.009-0.0085 | 53.90 | 48.90 |
| 0.008-0.0075 | 55.50 | 50.10 |
| 0.007 | 57.00 | 51.60 |
| 0.006 | 58.60 | 53.00 |

### ALUMINUM (continued)

**Plates and Circles:** Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

| Alloy | Plate Base | Circle Base |
|---|---|---|
| 1100-F, 3003-F | 41.70 | 46.50 |
| 5050-F | 42.80 | 47.60 |
| 3004-F | 43.80 | 49.50 |
| 5052-F | 44.40 | 50.20 |
| 6061-T6 | 44.90 | 51.00 |
| 2024-T4 | 48.60 | 55.40 |
| 7075-T6* | 56.40 | 64.00 |

*24-48 in. width or diam., 72-180 in. lengths.

**Screw Machine Stock:** 30,000 lb base.

| Diam.(in.)or across flats | Round 2011-T3 | Round 2017-T4 | Hexagonal 2011-T3 | Hexagonal 2017-T4 |
|---|---|---|---|---|
| **Drawn** | | | | |
| 0.125 | 76.20 | 73.20 | ..... | ..... |
| 0.156 | 64.20 | 61.40 | ..... | ..... |
| 0.172 | ..... | 61.40 | ..... | ..... |
| 0.188 | 64.20 | 61.40 | ..... | 79.60 |
| 0.203 | 64.20 | 61.40 | ..... | ..... |
| 0.219-0.234 | 61.00 | 59.50 | ..... | ..... |
| 0.250 | 61.00 | 59.50 | 88.40 | 75.90 |
| 0.266-0.281 | 61.00 | 59.50 | ..... | ..... |
| 0.313 | 61.00 | 59.50 | 81.40 | 72.20 |
| 0.344 | 60.50 | ..... | 81.40 | ..... |
| **Cold-Finished** | | | | |
| 0.375-0.547 | 60.50 | 59.30 | 72.80 | 67.80 |
| 0.563-0.688 | 60.50 | 59.30 | 69.10 | 63.50 |
| 0.719 | ..... | 57.70 | ..... | ..... |
| 0.750-1.000 | 59.00 | 57.70 | 62.90 | 59.70 |
| 1.063 | 59.00 | 57.70 | ..... | 57.60 |
| 1.250-1.500 | 56.60 | 55.40 | 60.80 | 57.60 |
| **Rolled** | | | | |
| 1.563 | 55.00 | 53.70 | ..... | ..... |
| 1.625-2.000 | 54.30 | 52.90 | 59.60 | 55.50 |
| 2.063 | ..... | 51.40 | ..... | ..... |
| 2.125-2.500 | 52.80 | 51.40 | ..... | 55.50 |
| 2.500-3.000 | 51.20 | 49.70 | ..... | 55.50 |
| 3.250-3.375 | ..... | 49.70 | ..... | ..... |

**Forging Stock:** Round, Class 1, random lengths, diam. 0.688-8 in., "F" temper: 2014, 41.50-54.30; 6061, 40.90-54.30; 7075, 42.90-56.30; 7079, 43.40-56.80.

**Pipe:** ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

| Nom. Pipe Size (in.) | | Nom. Pipe Size (in.) | |
|---|---|---|---|
| ¾ | $18.60 | 2 | $ 57.40 |
| 1 | 29.35 | 4 | 157.60 |
| 1¼ | 39.75 | 6 | 282.95 |
| 1½ | 47.50 | 8 | 425.80 |

**Extruded Solid Shapes:**

| Factor | Alloy 6063-T5 | Alloy 6062-T6 |
|---|---|---|
| 9-11 | 45.40-47.00 | 58.60-62.80 |
| 12-14 | 45.70-47.20 | 59.30-63.80 |
| 15-17 | 45.90-47.90 | 60.50-65.50 |
| 18-20 | 46.50-48.30 | 62.50-68.10 |

### MAGNESIUM

**Sheet and Plate:** AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths: .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, .25-3.0 in., 73.00.

**Extruded Solid Shapes:**

| Factor | Com. Grade (AZ31C) | Spec. Grade (AZ31B) |
|---|---|---|
| 6-8 | 69.60-72.40 | 84.60-87.40 |
| 12-14 | 70.70-73.00 | 85.70-88.00 |
| 24-26 | 75.60-76.30 | 90.60-91.30 |
| 36-38 | 89.20-90.30 | 104.20-105.30 |

## NONFERROUS SCRAP

### DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

**Aluminum:** 1100 clippings, 12.00-12.50; old sheets, 9.00-9.50; borings and turnings, 5.00-

## BRASS MILL PRICES

| | MILL PRODUCTS a | | | | SCRAP ALLOWANCES f | | |
|---|---|---|---|---|---|---|---|
| | Sheet, Strip, Plate | Rod | Wire | Seamless Tubes | Clean Heavy | Rod Ends | Clean Turnings |
| Copper | 48.13b | 45.36c | ..... | 48.32 | 21.000 | 21.000 | 20.250 |
| Yellow Brass | 42.69 | 31.03d | 43.23 | 45.60 | 16.125 | 15.875 | 14.500 |
| Low Brass, 80% | 44.90 | 44.84 | 45.44 | 47.71 | 17.875 | 17.625 | 17.125 |
| Red Brass, 85% | 45.67 | 45.61 | 46.21 | 48.48 | 18.625 | 18.375 | 17.875 |
| Com. Bronze, 90% | 46.98 | 46.92 | 47.52 | 49.54 | 19.250 | 19.000 | 18.500 |
| Manganese Bronze | 50.81 | 44.91 | 55.44 | ..... | 14.875 | 14.625 | 14.125 |
| Muntz Metal | 45.19 | 41.00 | ..... | ..... | 15.125 | 14.875 | 14.375 |
| Naval Brass | 47.07 | 41.38 | 54.13 | 50.48 | 14.875 | 14.625 | 14.125 |
| Silicon Bronze | 52.84 | 52.03 | 52.88 | 54.77 | 20.625 | 20.375 | 19.625 |
| Nickel Silver, 10% | 57.93 | 60.26 | 60.26 | ..... | 21.125 | 20.875 | 10.562 |
| Phos. Bronze, A-5% | 67.17 | 67.67 | 67.67 | 68.85 | 21.875 | 21.625 | 20.625 |

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, or any or all kinds of scrap, add 1 cent per lb.

5.50; crankcase, 9.00-9.50; industrial castings, 9.00-9.50.

**Copper and Brass:** No. 1 heavy copper and wire, 18.00-18.50; No. 2 heavy copper and wire, 16.00-16.50; light copper, 14.00-14.50; No. 1 composition red brass, 15.00-15.50; No. 1 composition turnings, 14.00-14.50; new brass clippings, 13.00-13.50; light brass, 8.50-9.00; heavy yellow brass, 10.50-11.00; new brass rod ends, 11.00-11.50; auto radiators, unsweated, 11.00-11.50; cocks and faucets, 12.50-13.00; brass pipe, 12.50-13.00.

**Lead:** Heavy, 7.50-8.00; battery plates, 2.75-3.00; linotype and stereotype, 9.75-10.25; electrotype, 9.00-9.50; mixed babbitt, 9.75-10.25.

**Monel:** Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

**Nickel:** Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

**Zinc:** Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

### REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

**Aluminum:** 1100 clippings, 15.50-16.25; 3003 clippings, 15.50-16.25; 6151 clippings, 15.50-16.50; 5052 clippings, 15.00-15.75; 2014 clippings, 15.00-15.25; 2017 clippings, 15.00-15.25; 2024 clippings, 15.00-15.25; mixed clippings, 14.00-14.75; old sheets, 11.50-12.25; old cast, 11.50-12.25; clean old cable (free of steel), 14.50-15.25; borings and turnings, 12.00-13.00.

**Beryllium Copper:** Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 51.00; light scrap, 46.00; turnings and borings, 31.00.

**Copper and Brass:** No. 1 heavy copper and wire, 20.00; No. 2 heavy copper and wire, 18.25; light copper, 16.00; refinery brass (60% copper) per dry copper content, 17.75.

### INGOTMAKERS' BUYING PRICES

**Copper and Brass:** No. 1 heavy copper and wire, 20.00; No. 2 heavy copper and wire, 18.25; light copper, 16.00; No. 1 composition borings, 17.50; No. 1 composition solids, 18.00; heavy yellow brass solids, 12.50; yellow brass turnings, 11.50; radiators, 14.00.

## PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

### ANODES

**Cadmium:** Special or patented shapes, $1.70

**Copper:** Flat-rolled, 41.79; oval, 40.00, 5000-10,000 lb; electrodeposited, 31.25, 2000-5000 lb lots; cast, 36.25, 5000-10,000 lb quantities.

**Nickel:** Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

**Tin:** Bar or slab, less than 200 lb, 112.50; 200-499 lb, 111.00; 500-999 lb, 110.50; 1000 lb or more, 110.00.

**Zinc:** Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

### CHEMICALS

**Cadmium Oxide:** $1.70 per lb in 100-lb drums.

**Chromic Acid:** 100 lb, 33.30; 500 lb, 32.80; 2000 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30; f.o.b. Detroit.

**Copper Cyanide:** 100-200 lb, 68.40; 300-900 lb, 66.40; 1000-19,900 lb, 64.40.

**Copper Sulphate:** 100-1900 lb, 13.70; 2000-5900 lb, 11.70; 6000-11,900 lb, 11.45; 12,000-22,900 lb, 11.20; 23,000 lb or more, 10.70.

**Nickel Chloride:** 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.

**Nickel Sulphate:** 5000-22,000 lb, 33.50; 23,000-35,900 lb, 33.00; 36,000 lb or more, 32.50.

**Sodium Cyanide:** 100 lb, 27.60; 200 lb, 25.90; 400 lb, 22.90; 1000 lb, 21.90; f.o.b. Detroit.

**Sodium Stannate:** Less than 100 lb, 75.20; 100-600 lb, 66.20; 700-1900 lb, 63.50; 2000-9900 lb, 61.60; 10,000 lb or more, 60.30.

**Stannous Chloride (anhydrous):** Less than 25 lb, 164.70; 25 lb, 129.70; 100 lb, 114.70; 400 lb, 112.20; 5200-19,600 lb, 100.00; 20,000 lb or more, 87.80.

**Stannous Sulphate:** Less than 50 lb, 127.50; 50 lb, 97.50; 100-1900 lb, 95.50; 2000 lb or more, 93.50.

**Zinc Cyanide:** 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 145)

Colorado Fuel & Iron Corp. resumed production of seamless pipe at its Pueblo Works last week. The mill had been down for repairs since Mar. 23.

## Pig Iron . . .

Pig Iron Prices, Page 139

Some pig iron producers are growing a bit apprehensive that sales during the second quarter may not match those recorded in the first three months of the year. Bookings in April showed no improvement over those recorded in March.

Practically no one in the trade expects much foundry activity in the third quarter when holidays and vacations will cut into demand for castings. This leaves only the fourth quarter on which sellers can pin their hopes for improved business.

Movement of pig iron on the Great Lakes is getting off to a much slower start than last year. Only a little barge canal tonnage has been booked so far this season.

## Tubular Goods . . .

Tubular Goods Prices, Page 138

Seasonal expansion in construction is stimulating demand for standard pipe, but volume is still disappointing, and the situation in the tubular goods market, over-all, leaves much to be desired from the standpoint of producers.

Expectations are that building requirements will rise steadily over the next several months as the construction season gets into full swing.

Mechanical and pressure tubing bookings are reported somewhat improved. Sluggish utility buying is adversely affecting pressure tubing.

Imports of merchant pipe, 2 in. and under, are heavier along the Atlantic seaboard. Improvement in pipe demand in the East is limited to construction needs, and to some extent to airfield fueling systems.

The outlook for tubular goods demand from the oil country is not promising. Some observers think it will be October before demand begins to recover in this area. E. B. Germany, president, Lone Star Steel Co., though, last week told employees of the company that there are signs of improvement in drilling and the oil business generally, and that many pipeline companies are

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Townsend Company requires experienced man to head up new A.R.S. facility to be located at their Chicago plant.

**Phone or write**
**H. C. Kornman, Works Mgr.**
**Townsend Company**
**New Brighton, Pennsylvania**


## CLASSIFIED

### Help Wanted

— WANTED —

Experienced office man for steel tube distributing office in Metropolitan New York area, with knowledge of steel grades, mill and warehouse pricing and telephone sales. Good opportunity for right man. All replies confidential. Our organization knows of this advertisement. Write Box 662, STEEL, Penton Bldg., Cleveland 13, Ohio.

ROLL PASS DESIGNER—on consultant basis. Must be capable of the layout and design of grooved rolls for both hot and cold rolling of ferrous and nonferrous materials. Thorough rolling practice experience and ability to calculate reductions in area and roll groove design are essential requirements. Address Box 663, STEEL, Penton Bldg., Cleveland 13, Ohio.

### Positions Wanted

QUALITY CONTROL ENGINEER—Experienced in all phases of quality control, including statistical analysis methods. Married. Best references. College Grad. Write Box 660, STEEL, Penton Bldg., Cleveland 13, Ohio.


**WE CAN HELP YOU TO CONTACT** high calibre men to fill specific jobs you have in mind—
Readers of STEEL include men of wide training and experience in the various branches of the metalworking industry. When you have an opportunity to offer, use the Help Wanted columns of STEEL.

# Do you need better ways to strip paint?

**When tough finishes resist your present stripping methods, you may need help on some of these problems:**

1 How to strip oil-base paints . . . synthetic enamels . . . alkali-resistant plastics . . . resin-base paints . . . japans . . . wrinkle finishes . . . nitrocellulose lacquers . . . alkyds . . . phenolics . . . ureas.

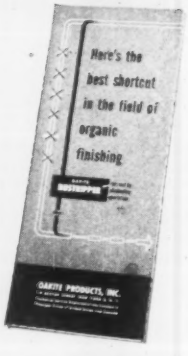
2 How to strip zinc chromate primers without etching aluminum.

3 How to strip paint from vertical surfaces and undersurfaces where thin-bodied strippers run off without doing their work.

4 How to strip metal parts that are too large to be soaked in tanks.

5 How to strip paint, pigment residues, phosphate coatings and rust in one operation.

6 How to strip paint from rejects, conveyor chains, racks and hooks in continuous operation.




**Oakite has more than a dozen fine stripping materials for these and similar jobs.**

**FREE** For information on problems 1, 2, 3 and 4 ask for a copy of "How to STRIP PAINT". For more on problems 5 and 6 ask for "Here's the best shortcut in the field of organic finishing". Write to Oakite Products, Inc., 34E Rector St., New York 6, N. Y.

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going ahead with construction plans. Some trade authorities think the pipeline people may not wait for the Supreme Court decision in the Memphis Case to go ahead on pending work.

Generally, it is thought that the Texas oil industry will continue its record low eight-day per month production schedule through May, precluding any immediate upturn in exploration and drilling. The situation is much the same in other oil fields.

Drilling in the U. S. declined last year for the first time since 1949. New wells dropped by 8 per cent to 53,700, and wildcat wells were off 10 per cent to 11,700. The slowdown this year is even more severe, drilling reportedly running as much as 25 per cent behind that of a year ago. Last month, one authority estimated that only 1800 of the nation's 3000 rigs were working.

A proposed freight rate decrease on iron and steel pipe shipped into the Southwest has been temporarily halted by a restraining order granted in Houston by U. S. District Judge Allen B. Hannay at the request of 11 barge lines.

The Interstate Commerce Commission had granted the railroads relief under Sec. 4 of the ICC Act, which would have permitted the carriers to charge lower rates for short hauls. The barge lines contend the new rates would have been at the same level or below those charged by water and motor carriers.

Pipe (steel and wrought iron) shipped from eastern, southern, and midwestern mills to Arkansas, Kansas, Louisiana, Missouri, Oklahoma, and Texas is involved. No date has been set for a final hearing.

One Detroit manufacturer reports orders are for small diameter tubing for appliances, such as refrigerators and home cooling units. Electrical conduit and house construction items are starting to get more active.

About 400 steelworkers returned to work last week at the seamless tube mill of Colorado Fuel & Iron Corp.'s Pueblo Works. It had been down for repairs since Mar. 23. Company executives say production will replace depleted stocks and meet orders for oil country tubular goods.

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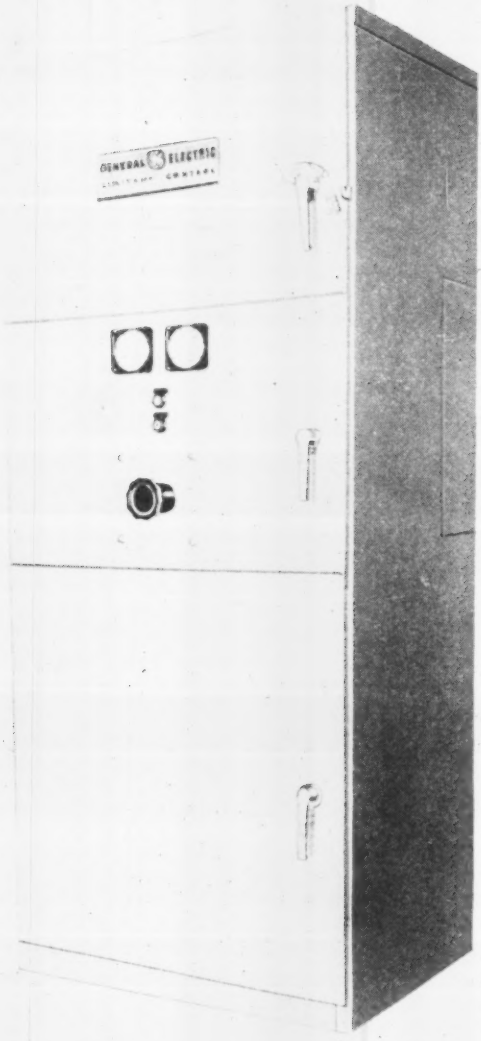



**G-E LIMITAMP CONTROLLERS** offer users coordinated control for high voltage motors, 2300-4600 v, up to 3000 hp. They are ideally suited for the control of squirrel-cage, synchronous, wound-rotor and multi-speed motors on power systems requiring high interrupting capacity for maximum short-circuit protection.

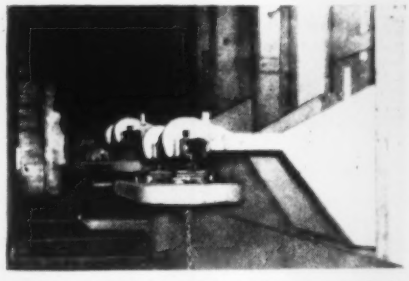
## ACP Dip Granodine Process has improved finishes, cut rejects materially on control enclosures

The Industry Control Department of General Electric Company, Roanoke, Va., was looking for an improved method in finishing the steel cabinets and framework for its various control enclosures, such as the Limitamp* panel shown above. An improved prepaint method was needed in order to obtain the high-quality finished paint job required on the enclosures.

General Electric contacted an ACP representative for consultation. He surveyed the operation and at his recommendation ACP Dip GRANODINE 20 was adopted to replace the process in use. The result has been finishes of a clean smooth appearance, besides improved corrosion resistant qualities. In addition, rejects have been materially reduced.

Perhaps you have a similar problem in your finishing department . . . or others that can be solved by using an ACP chemical prepaint treatment. Our application engineers will be glad to help you—feel free to call on us. American Chemical Paint Co., Ambler, Pa.

*Reg. TM of General Electric Co. GRANODINE is a registered trademark of American Chemical Paint Co.



**CHEMICAL TREATMENT PROCESSES** like ACP Dip GRANODINE 20 used in this Magnus Aja-Lift Automatic Dip Equipment offer improved corrosion resistance, excellent paint adhesion, durable paint finishes.

**AMERICAN CHEMICAL PAINT COMPANY, Ambler 19, Pa.**

DETROIT, MICH. • ST. JOSEPH, MO. • NILES, CALIF. • WINDSOR, ONT.

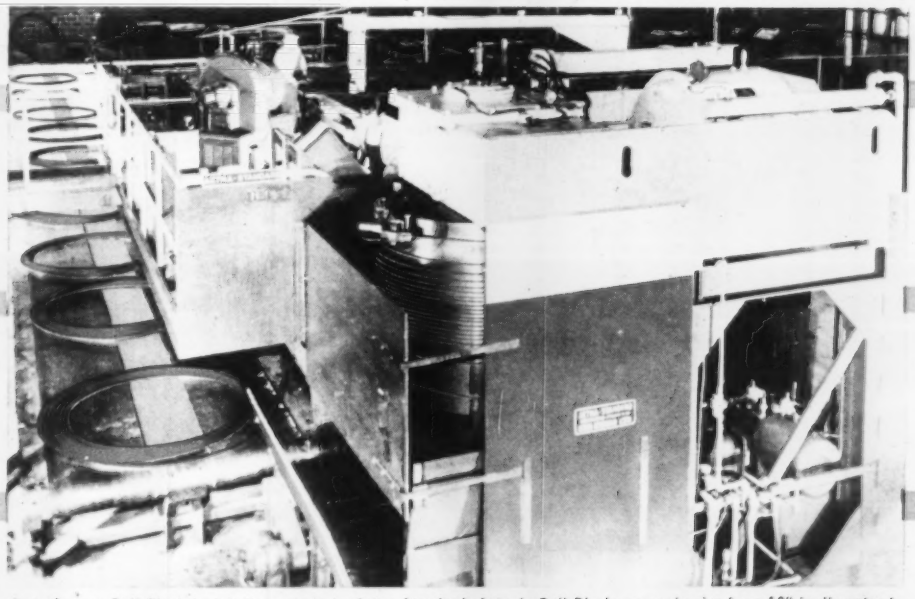
CHEMICALS ACP PROCESSES

*New Chemical Horizons for Industry and Agriculture*

# ECONOMICAL PRODUCTION

# OF THIN WALL, SMALL

# DIAMETER TUBING



One of many Bull Block installations made by Aetna-Standard. Aetna's Bull Blocks range in size from 12" in diameter to 60" in diameter at speeds up to 2,000 feet per minute. Types—Horizontal, Inverted or Vertical.

Coil handling is most important for economy in production with a Bull Block. Aetna's engineers have concentrated on the method of moving the tube from the drum after drawing and the method of transferring the material back to the block. The payoff tray, the ease of entry, and the ease of gripping,ungripping and loading add to the economy of operation.

Our hydraulic feed gives absolute accuracy in traversing the die to the drum during drawing. Unique electrical controls give the operator instant control of speeds from zero to 2,000 feet per minute.

There's nothing new about the use of Bull Blocks. They have been in use for many years. But the design remained unchanged until Aetna-Standard, a pioneer in Drawbenches and other cold draw equipment, completely redesigned the Bull Block and made it a practical unit for high-speed production of small diameter, thin wall tubing. We have made installations for most of the major producers of copper, brass and aluminum tubing.

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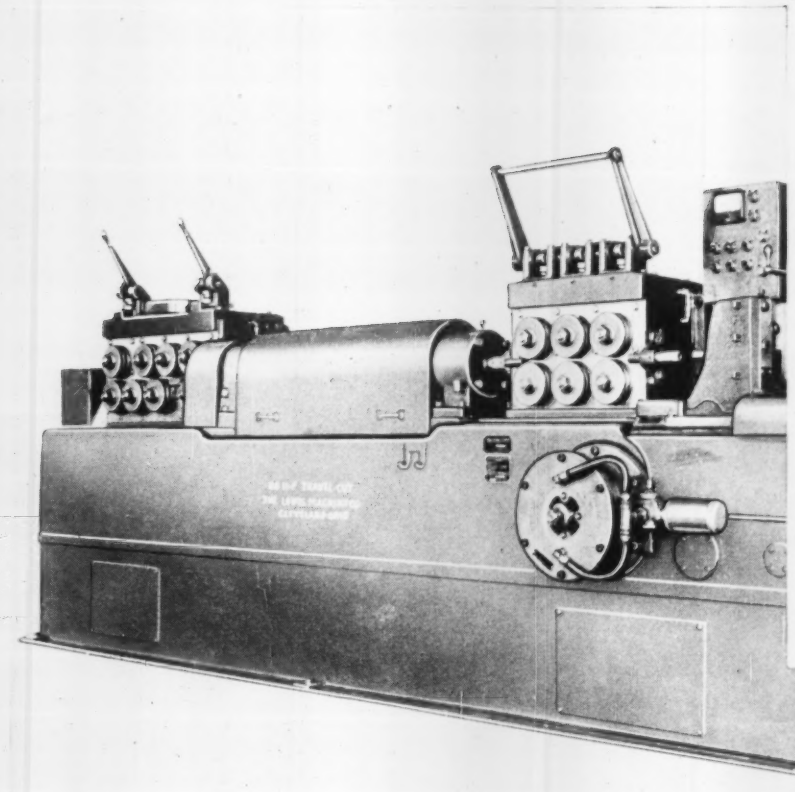

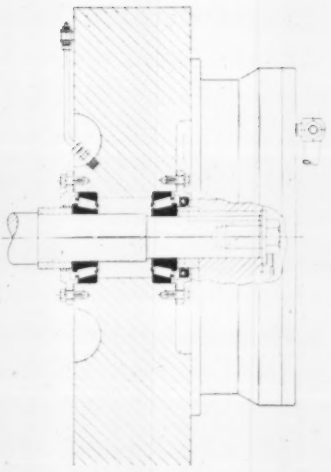

How **THE LEWIS MACHINE CO.**, Cleveland, Ohio, mounts the flywheel of its Model 11-F Travel-Cut Wire Straightening and Cutting Machine on Timken bearings to provide stability, dependable performance, economical operation.

# How TIMKEN® bearings keep flywheel stable on automatic wire straightening and cutting machine

TO take the varying loads of automatic wire straightening and cutting, the bearings in this Lewis Model 11-F Travel-Cut have to be extra tough and virtually friction-free. That's why The Lewis Machine Company uses Timken® tapered roller bearings for the flywheel, feed rolls and drive—38 in all. Timken bearings keep the flywheel stable and rotating freely, position gears and feed rolls accurately even under heavy loads.

**EXTRA LOAD-CARRYING CAPACITY.** Full line contact between their rollers and races gives Timken bearings extra load-carrying capacity. Tapered design lets Timken bearings take *both* radial and thrust loads in any combination. The flywheel doesn't wobble. Gears and feed rolls *stay* in position.

**PRACTICALLY FRICTION-FREE PERFORMANCE.** Because they're geometrically designed to roll true, and precision-made to live up to their design, Timken bearings virtually eliminate friction. They run smoother, last longer.

**NO SHOCK PROBLEMS.** Because they're case-carburized, Timken bearings' rollers and races have a hard, wear-resistant surface over a tough, shock-resistant core. They *absorb* shocks, reduce maintenance.

That's why it pays to specify bearings trade-marked "TIMKEN". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable: "TIMROSCO".

TIMKEN BEARING EQUIPPED

*This symbol on a product means its bearings are the best.*

TIMKEN TAPERED ROLLER BEARINGS ROLL THE LOAD